IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

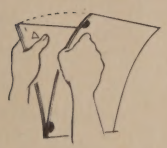
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

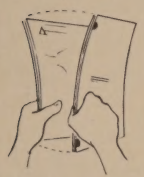
DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***



1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.



2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 499 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT. 1960

CONTENTS PHOTOFACT SET 499

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WP-167	499-4
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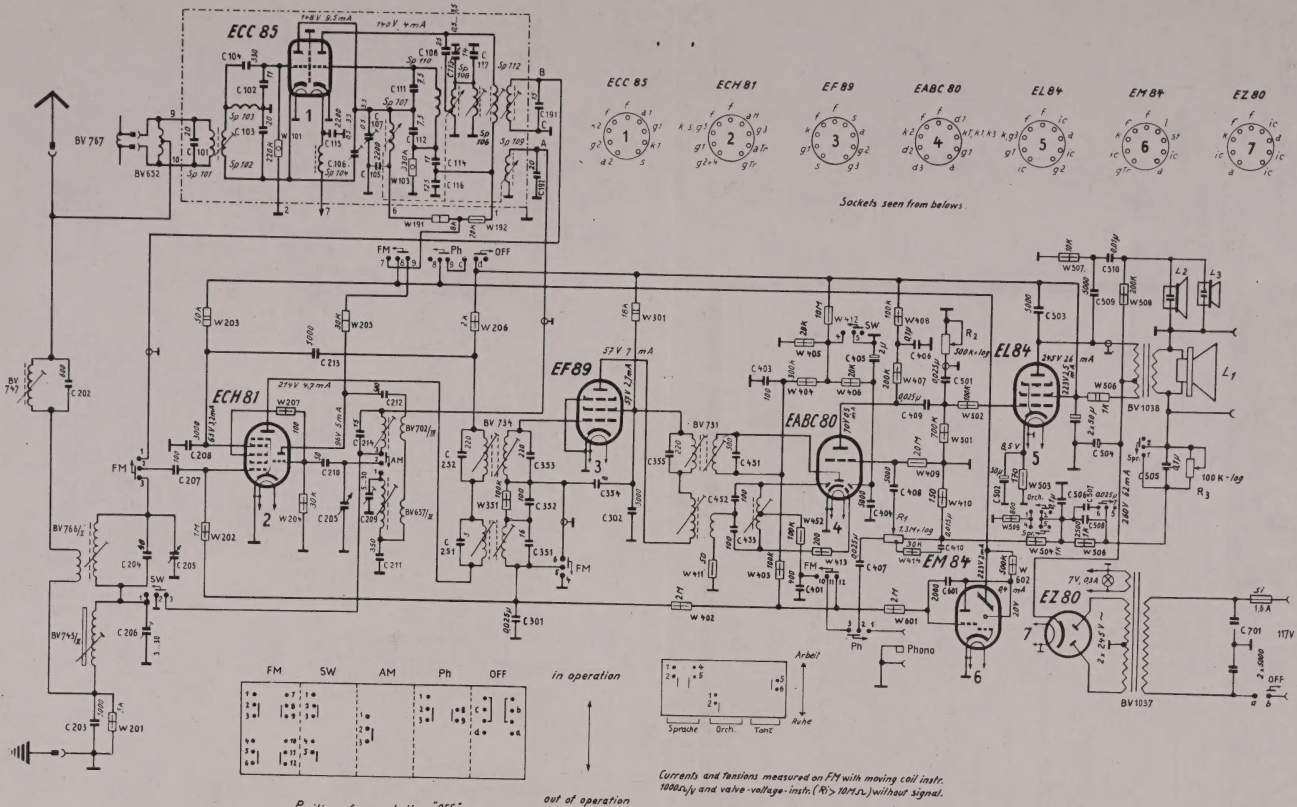
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

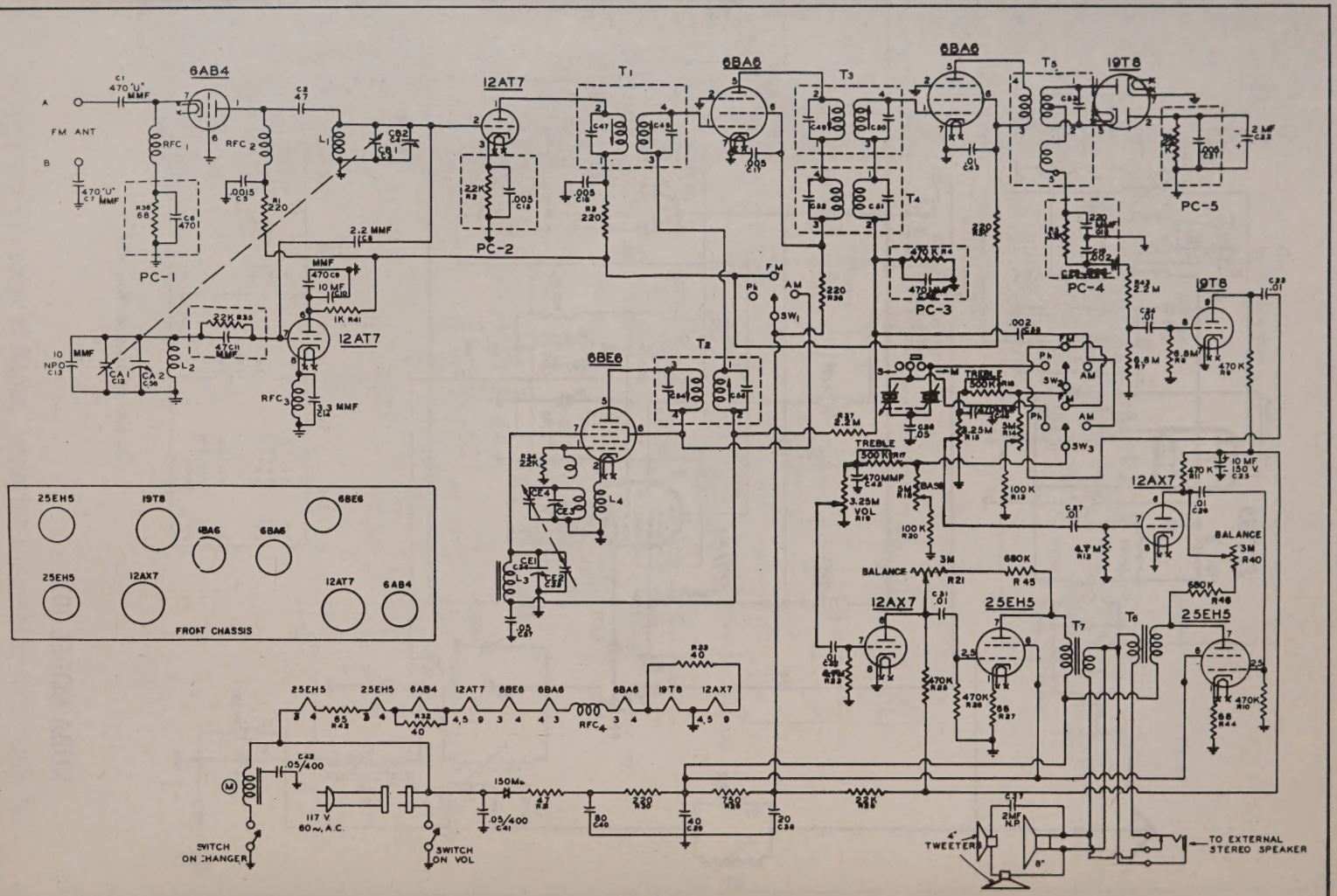
Capitol Model 2833

Kuba Model 1011



KUBA MODEL 1011

Schematic Diagram Courtesy of Kuba: Importer Delmonico International



CAPITOL MODEL 2833

Schematic Diagram Courtesy of Capitol Records, Inc.

PHOTOFACT® Folder

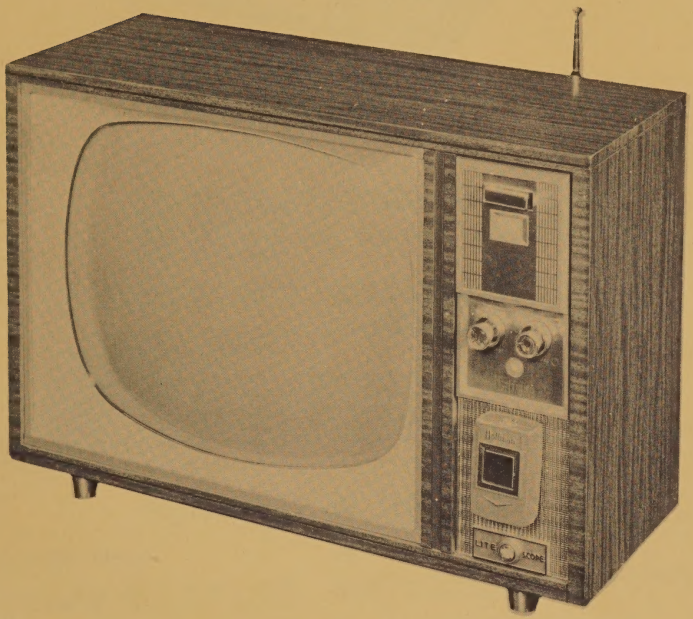
HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOFFMAN CHASSIS 351, 352, 353, 307002, 307003



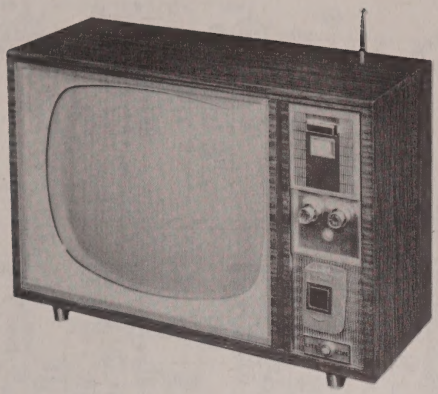
HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

MODEL MR1367 (CH. 352)

SET 499 FOLDER 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



MODEL MR1367 (CH. 352)

TRADE NAME	HOFFMAN MODELS	CHASSIS
	B1367, B1371, K1367, K1371, M1367, M1371, SP1367, SP1371, W1367, W1371	351
	BR1367, BR1371, KR1367, KR1371, MR1367, MR1371, SPR1367, SPR1371, WR1367, WR1371	352
	B3723, B3743, B3753, M3723, M3743, M3753, SP3723, SP3743, SP3753, W3723, W3743, W3753	353
MANUFACTURER	Hoffman Electronics Corp., Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles 3, Calif.	
TYPE SET	Television Receiver (Models with TV Ch. 352 use Remote Control Receiver 307003 and Remote Control Transmitter 307002)	
TUBES	TV: VHF - Nineteen, UHF - Twenty Remote Control Receiver: Three	
TRANSISTOR	Remote Control Transmitter: One	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	
RATING	235 Watts, 2.3 Amp. @ 117 Volts AC (With Remote, While Tuning)	
	230 Watts, 2.2 Amp. @ 117 Volts AC (Without Remote, While Tuning)	
	220 Watts, 2.0 Amp. @ 117 Volts AC (With Remote, Not Tuning)	
	205 Watts, 1.9 Amp. @ 117 Volts AC (TV Only, Not Tuning)	
POWER SUPPLY	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

SAFETY GLASS AND MASK REMOVAL

Remove 2 screws at the bottom front of cabinet. Pull out and down on bottom of the mask. Remove safety glass and mask (single unit).

In 23" models, the safety glass is an integral part of the picture tube.

FUSE

A 3.2 Amp S/B line fuse is used for TV receiver protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection for the remote control receiver. (For location, see M4 in photo "Receiver -Bottom View".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove upper half of escutcheon plate, channel seeking switch, and fine tuning knob.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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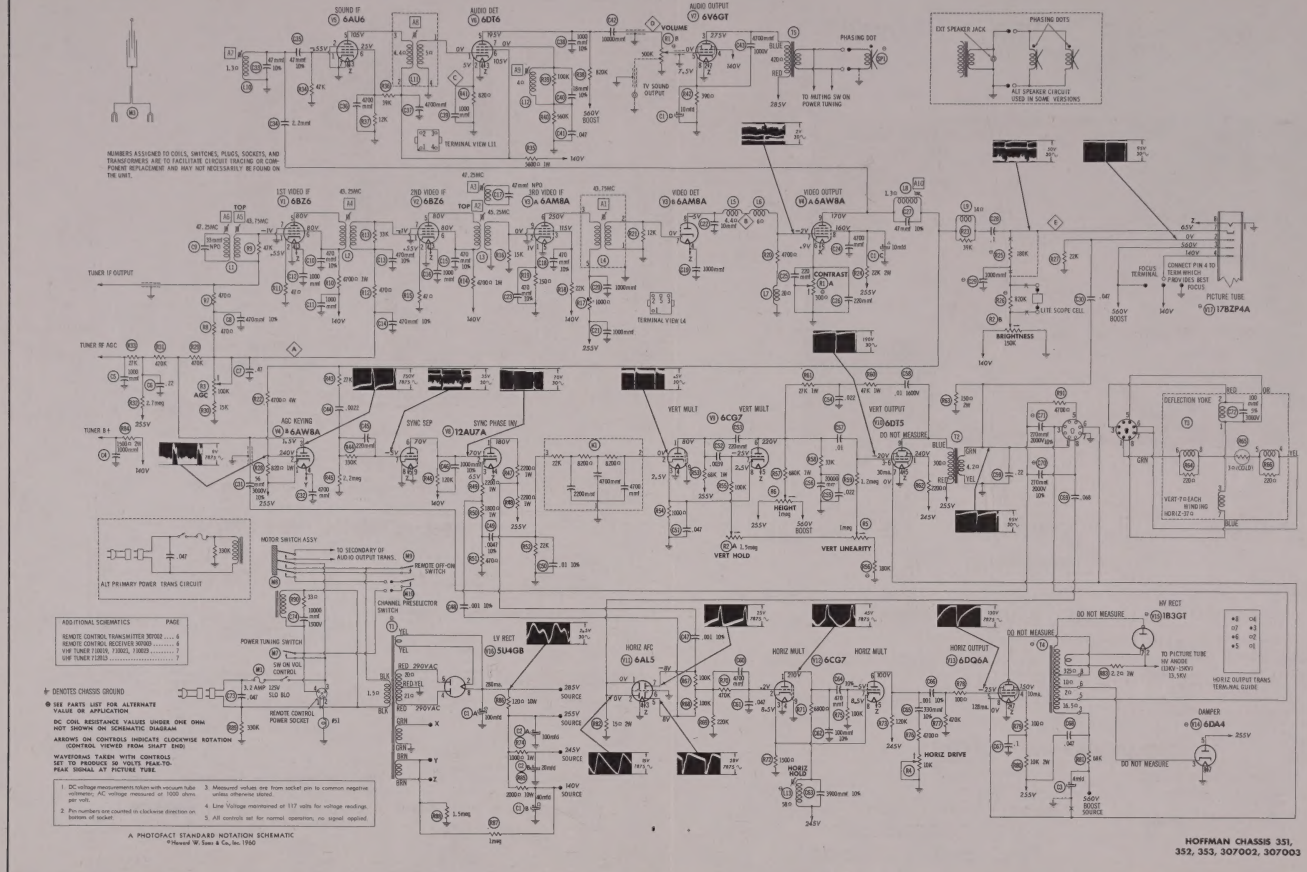
KA148

HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

SET 499 FOLDER 1


SOUND IF
6AU6
AUDIO DET
6DT6
AUDIO OUTPUT
6V6GT
VOLUME
TV SOUND OUTPUT
PHASING DOT
TO MUTING SW ON POWER TUNING
EXT SPEAKER JACK
PHASING DOTS
ALT SPEAKER CIRCUIT USED IN SOME VERSIONS
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
TERMINAL VIEW L11
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6AM8A
VIDEO DET
6AM8A
VIDEO OUTPUT
6AW8A
TOP
TUNER IF OUTPUT
TERMINAL VIEW L4
CONTRAST
FOCUS TERMINAL
CONNECT PIN 4 TO TERM WHICH PROVIDES BEST FOCUS
LITE SCOPE CELL
BRIGHTNESS 150K
PICTURE TUBE
17BZP4A
560V BOOST
140V
TUNER RF AGC
AGC KEYING
6AW8A
SYNC SEP
SYNC PHASE INV
72AU7A
VERT MULT
6CG7
VERT OUTPUT
6DT5
DO NOT MEASURE
DEFLECTION YOKE
VERT-TO-EACH WINDING HORIZ-37Ω
VERT HOLD
VERT LINEARITY
TUNER B+
ALT PRIMARY POWER TRANS CIRCUIT
MOTOR SWITCH ASSY
TO SECONDARY OF AUDIO OUTPUT TRANS.
REMOTE OFF-ON SWITCH
CHANNEL PRESELECTOR SWITCH
POWER TUNING SWITCH
SW ON VOL CONTROL
REMOTE CONTROL POWER SOCKET
LV RECT
5U4GB
HORIZ AFC
6AL5
HORIZ MULT
6CG7
HORIZ OUTPUT
6DQ6A
HORIZ HOLD
HORIZ DRIVE
HV RECT
1B3GT
TO PICTURE TUBE HV ANODE (LEAD-COATING)
HORIZ OUTPUT TRANS TERMINAL GUIDE
DAMPER
6DA4
ADDITIONAL SCHEMATICS PAGE
REMOTE CONTROL TRANSMITTER 307002 6
REMOTE CONTROL RECEIVER 307002 6
VHF TUNER 710039, 730021, 730023 7
UHF TUNER 710053 7
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
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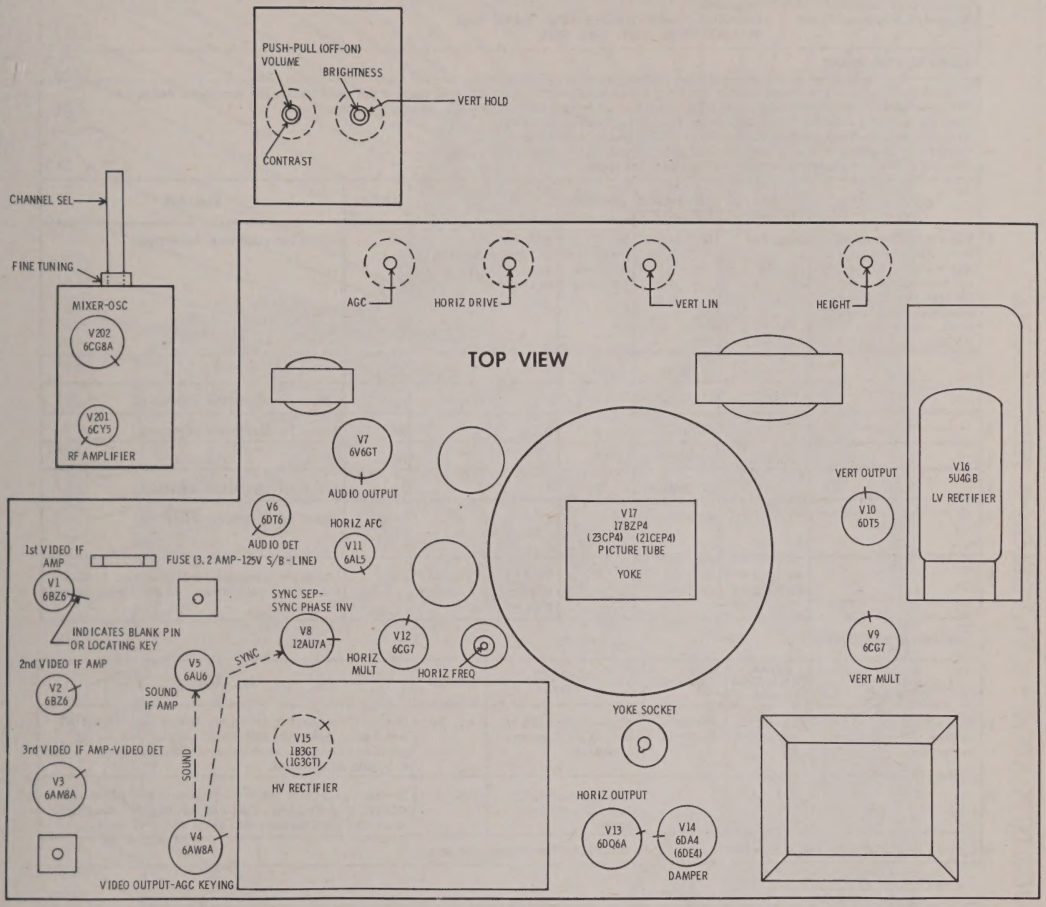
HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Line Fuse, V16

SWEEP FAILURE
No raster, has sound V12, V13, V14, V15, V17
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, V16
Vert. off freq. V9
Horiz. off freq. V11, V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V17
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, V11
No vert. or horiz. sync V8

HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Connect bias as under "Video IF Alignment".
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect a 1000mmf capacitor across VTVM and scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	43.75MC	Set Selector Between Channels	USE VTVM DC probe thru 10K to point Ⓑ. Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	45.5MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Between channels	DC probe thru 10K to point Ⓒ. Common to chassis.	A7, A8	Detune A9 by turning core fully clockwise. Adjust A7 and A8 for maximum deflection. Reduce the signal generator output to keep meter reading between 3.5 and 4.5 volts at all times.
10.	"	"	"	DC probe thru 10K to point Ⓓ. Common to chassis	A9	Increase generator output to maximum and adjust A9 for MINIMUM deflection. Continue turning core counter-clockwise until meter reads from 97 to 103 volts.
11.	Tune in a TV station and if necessary, retouch A9 SLIGHTLY for undistorted sound.					

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	High side thru .005mfd to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point Ⓔ. Common to chassis.	A10	Adjust for MINIMUM deflection.

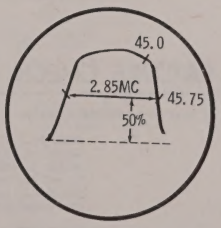
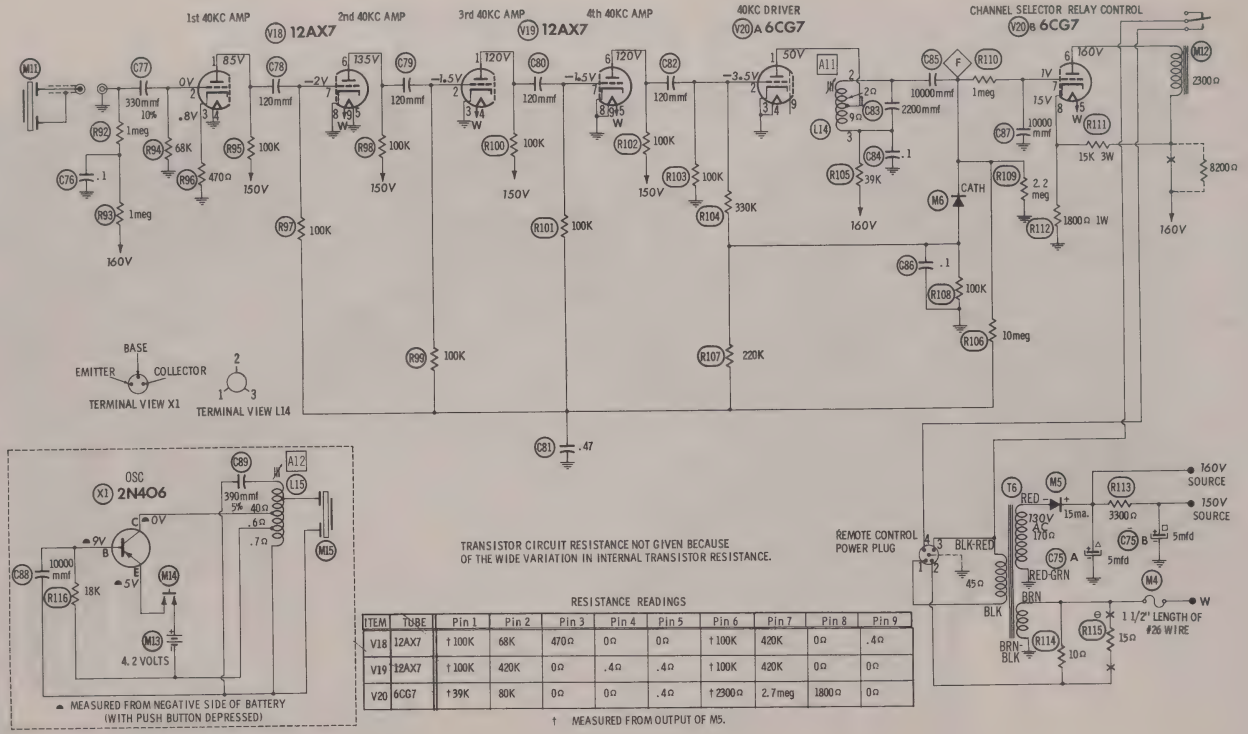


FIG. 1

REMOTE CONTROL ALIGNMENT INSTRUCTIONS PAGE 6
TUNER ALIGNMENT INSTRUCTIONS PAGE 8

TV CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V18	12AX7	†100K	68K	470Ω	0Ω	0Ω	†100K	420K	0Ω	.4Ω
V19	12AX7	†100K	420K	0Ω	.4Ω	.4Ω	†100K	420K	0Ω	0Ω
V20	6CG7	†39K	80K	0Ω	0Ω	.4Ω	†2300Ω	2.7meg	1800Ω	0Ω

† MEASURED FROM OUTPUT OF M5.

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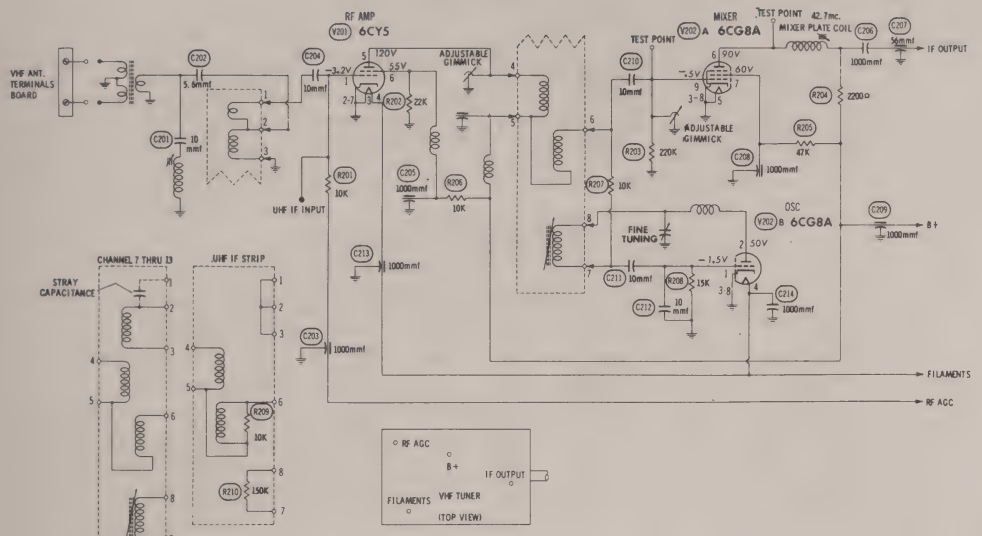
REMOTE CONTROL TRANSMITTER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to Horizontal Input terminals of scope. Low side to ground terminal of scope. (If available, a second transmitter may be substituted.	20.375KC (Unmod.)		Vert. Amp. probe placed near transmitter. Low side to negative side of transmitter battery.	A12	Depress transmitter button and adjust All for zero beat on scope.

REMOTE CONTROL RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
2.	High side thru .01mfd to input jack of receiver Low side to chassis.	40.75KC (Unmod.)		DC probe thru 10meg to point (F). Common to chassis.	All	Adjust for maximum deflection.

REMOTE CONTROL RECEIVER & TRANSMITTER



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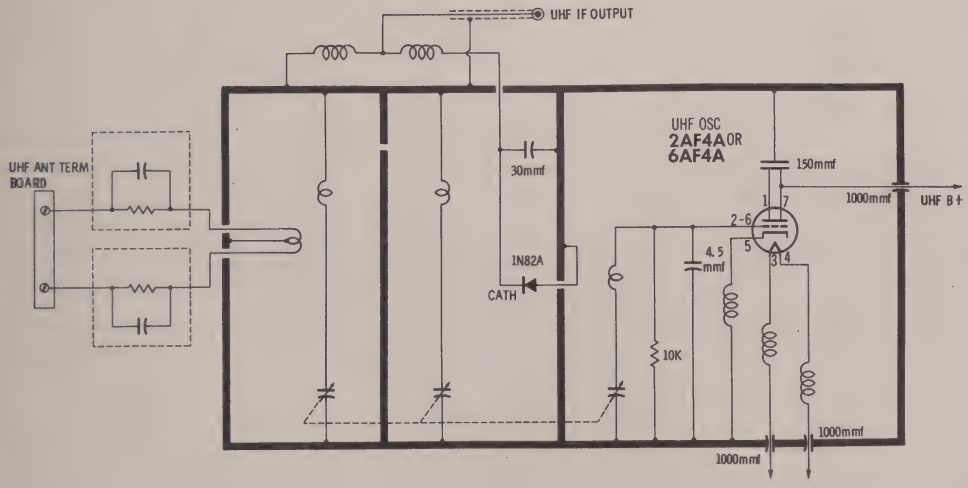
VHF TUNER 710019, 710021, 710023



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UHF TUNER 712013

SET 499 FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

710019, 710021, 710023

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C202	5.6					*		
C203	1000		EF-001	MFT-1000		CCF-102	CT280A	
C204	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10
C207	56					*		
C208	1000		EF-001	MFT-1000		CCF-102	CT280A	
C209	1000		EF-001	MFT-1000		CCF-102	CT280A	
C210	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C211	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C212	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		BPD-001	DD-103	BYA10D1M	CCD-102	B-210	5HK-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R201	10K			
R202	22K			
R203	220K			
R204	2200Ω			
R205	47K			

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R206	10K			
R207	10K			
R208	15K			
R209	10K			
R210	150K			

ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

TV
PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V9	Vert. Mult.	6CG7
V2	2nd Video IF Amp.	6BZ6	V10	Vert. Output	6DT5
V3	3rd Video IF Amp. - Video Det.	6AM8A	V11	Horiz. AFC	6AL5
V4	Video Output - AGC Keying	6AW8A	V12	Horiz. Mult.	6CG7
V5	Sound IF Amp.	6AU6	V13	Horiz. Output	6DQ6A
V6	Audio Detector	6DT6	V14	Damper	6DA4 (6DE4) *
V7	Audio Output	6V6GT	V15	HV Rectifier	1B3GT (1G3GT) *
V8	Sync Sep. - Sync Phase Inv.	12AU7A	V16	LV Rectifier	5U4GB

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V17	17BZP4	17CKP4 ①	17BZP4 ①	17BZP4/17CAP4/ 17CKP4 ①	17BZP4/17CAP4 ②	① Aluminized ② Silver Screen "85"
	21CEP4 23CP4	21CEP4 ①	21CEP4 ①	21CEP4/21CEP4A ①	21CEP4 ② 23CP4 ②	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	350	857104	AFH4-05-60	D0044	FP425.6	TMQ-194	TVLS-4635.10*	
B	■40	350							
C	▲10	350							
D	10	350							
C2A	▲100	350	856704	AFH2-100-50	B0726	FP256	TMD-91	TVL-2813	
B	▲20	350							
C3	4	600	856022	PRS1845	BRHV604		TD-8-600	TVA-1962	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C7	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C8	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C9	33	NPO			NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C10	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C11	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C14	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C15	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	47	NPO			NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C18	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C19	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C21	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	10				NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TS-Q10
C23	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C24	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C25	220				DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C26	220				DI-2220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C27	47		10%		DI-47	DTZ-47	L10Q47	CCD-470	GP447	10TS-Q10
C28	.1	600V			P688N-1	DF-104	CUB6PL	6DP-4-104	GEM-601	5TM-P1
C29	1000			Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C30	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C31	56	3000V	10%					HVDM-42-560J	6DY-456	
C32	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C33	47		10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C34	2.2				NPO-DI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TS-V22
C35	47		10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C36	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C37	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C38	1000		10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C39	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C40	18		10%		DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C41	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C42	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	4700	1000V			BPD-0047	DD-472	CUB10D47	CCD-472	B-247	5HK-D47
C44	.0022	400V			P488N-0022	D6-222	CUB6D47	6DP-1-222	GEM-6222	6TM-D22
C45	220				DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C46	1000		10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C47	.001	400V	10%		V84C6D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D1
C48	.001	400V	10%		V84C6D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D1
C49	.0047	200V	10%		V84C6D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C50	.01	400V	10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C51	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C52	.0039	600V			P684CM-0039	DD-392	CUB6S4	6DP-1-392	GEM-624	6TM-D4
C53	220				DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C54	.022	600V			P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C55	.022	600V			P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C56	30000			BPD-03	BD-033	DYS682	CCD-303	B-130	51K-G30
C57	.01	600V		P688N-01	DS-103	CUB68	6DP-3-103	GEM-S11	67M-S1
C58	.01	1600V		P184AC34-01	DZ68-103	CUB68	16DP-3-103	GEM-1611	MD-1D
C59	.22	200V		P288N-22		CUB9Y22	2DP-4-224	GEM-2022	27M-P22
C60	4700			BPD-0047	DD-472	BTA10D4T47K	CCD-472	B-367	31K-D47
C61	.047	200V		P288N-047	DD-473	CUB3S47	6DP-3-473	GEM-4147	27M-S47
C62	100	10%		1469-0001	TC2E-101	1ZH5T1	CM-1H9-101K	MCB135	MS-101
C63	1800	10%		1464-0039		1H5D39	CM-2DB-392K	MC6466.5	MS-319
C64	470	10%		1469-00047		SR5T47	CM-1H9-471K	MC2364	MS-347
C65	330	10%		1469-00033		SR5T33	CM-1H9-331K	MC2361	MS-333
C66	001	600V	10%	Y94C5D1-10%	DD-102	PM5D1	6DP-1-103	GEM-1611	67M-D1
C67	.1	400V		P488N-1	DF-104	CUB4P1	6DP-3-473	GEM-4011	67M-P1
C68	.047	600V		P488N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	67M-S47
C69	.068	600V		P688N-068		CUB6S68	6DP-3-683	GEM-6168	67M-S68
C70	370	2000V	10%	Note 3			VCM-3S-371K		
C71	270	2000V	10%	Note 3			VCM-3S-271K		
C72	100	3000V	5%						
C73	.047	400V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	67M-S47
HT3	10000	1500V		DAC-01	DZ6E-103	EVT16E	16DP-3-103	UAC-110	B1L-E0

Note 1. Not used in Chassis 353. Note 2. Chassis 353 uses 170mmf ② 3KV.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300Ω	½	803054	RTV-709	Not Req.		#U6407O-8	Contrast Note 1
B	500K	½		Not Req.	Not Req.			Volume Note 1
C	Switch			Not Req.	Not Req.			Pwr-Pull, Off-On
R2A	1 5meg	½	803048 F1-54	RTV-708			#U6403	Vert. Hold
B	150K		R2-33	Not Req.				Brightness
R3A	100K	½	800038	A8-40	B47-100K-8	BL1-128	PTA18L	AGC
B	Shaft			A8-19	Not Req.	TM4	Not Req.	
R4A	10K	½	800060	A8-14	B47-10K-8	BL1-16	4U-30	Horiz. Drive
B	Shaft			A8-19	Not Req.	TM4	Not Req.	
R5A	1meg	½	800039	A8-39	B47-1meg-8	BL1-137	PTA1254L	Vert. Linearity
B	Shaft			A8-19	Not Req.	TM4	Not Req.	
R6A	1meg	½	800039	A8-39	B47-1meg-8	BL1-137	PTA1254L	Height
B	Shaft			A8-19	Not Req.	TM4	Not Req.	

† "STA-LOC" Equivalent: FA32L, RUP56A, OF156Z.
† "Concentric" Equivalent: K-6 Kit with Base Elements and Shafts: B11-138, P71-130 (Panel)
(Not available as a factory assembled unit.) B11-528, R1-200 (Rear)
"STA-LOC" Equivalent: FA18LL, OF182S, 1Z112S.
Note 1. Chassis 353 uses 300Ω contrast, 500K w/15K tap volume w/switch (Part #803054).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	470Ω	
R8	470Ω	
R9	47K	
R10	47000	1W
R11	47Ω	
R12	470Ω	
R13	33K	
R14	47000	1W
R15	47Ω	
R16	15K	
R17	1000Ω	
R18	22K	
R19	150Ω	
R20	470Ω	
R21	12K	
R22	47000	4W
R23	56K	
R24	22K	2W
R25	18K	Note 1
R26	820K	Note 2
R27	22K	
R28	9200	1W
R29	470K	
R30	15K	
R31	470K	
R32	2.7meg	
R33	27K	
R34	47K	
R35	5600	1W

ITEM No.	RATING	REMARKS
R36	39K	
R37	12K	
R38	820K	
R39	100K	
R40	560K	
R41	820Ω	
R43	390Ω	
R43	27K	
R44	330K	
R45	2.2meg	
R46	120K	
R47	2200Ω	1W
R48	2200Ω	1W
R49	2200Ω	1W
R50	1600Ω	1W
R51	470Ω	
R52	22K	
R53	68K	1W
R54	1000Ω	
R55	10K	
R56	18K	Note 3
R57	680K	1W
R58	33K	
R59	1.2meg	
R60	47K	1W
R61	27K	1W
R62	2200Ω	
R63	150Ω	2W
R64	220Ω	

ITEM No.	RATING	REMARKS
R65	3Ω (Cold)	
R66	330Ω	
R67	100K	
R68	100K	
R69	220K	
R70	470K	
R71	6800Ω	
R72	1500Ω	
R73	180K	
R74	10000	10W
R75	100K	
R76	470Ω	
R77	470K	
R78	100Ω	
R79	100Ω	
R80	40K	2W
R81	68K	
R82	15Ω	2W
R83	2, 2Ω	1W
R84	1500Ω	2W
R85	20000	10W
R86	1200	10W
R87	1meg	
R88	1.5meg	
R89	330K	
R90	33Ω	
R91	4700Ω	

Note 1. Chassis 351 uses 170K in this application. Not used in Chassis 353.
Note 2. Chassis 351 & 353 use 270K in this application.
Note 3. Alternate Value 120K. Chassis 353 uses 220K in this application.
Hoffman Part Number.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No.	REPLACEMENT DATA
K1	Vert. Integrator	3200mmf, 4700mmf, 4700mmf, 8200Ω, 8200Ω, 22K	986001-S	Aerovox PA-110 Centralab PC-100 Cornell-Dubilier 1ST7M1 Mallory MS 100 Sprague V-4/V-3

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Sam PART No.	NOTES
L1A	1st Video IF	763013						
B	47.25MC Trap							
L2	2nd Video IF	763017	IT-4533	IT-4533	TV-130	6319	VF-3	
L3A	3rd Video IF	763025	IT-4538	IT-4538		6323		
B	47.25MC Trap							
L4	4th Video IF	763019	IT-5004	IT-5004	TV-135	6324		
L5	RF Choke	750044	19-1004	19-1004	RC-561	6810		6.8uh ①
L6	Series Peaking Coil	771008	18-3100	18-3100	TV-131	6312	VF-3	100uh
L7	Shunt Peaking Coil	771018			TV-207	6156		330uh
L8	4.5MC Trap	763005	30-1004	30-1004	TV-133	6469	EF-3	
L9	Series Peaking Coil	771013	19-4301	19-4301	TV-197	6054		330uh
L10	1st Sound IF	763009	30-1004	30-1004	TV-151	6464	EF-3	
L11	2nd Sound IF	760003	17-3495	17-3495	TV-118	6303	EF-2	
L12	Quadrature Coil	774001	30-1007	30-1007	TV-151	3450		

① IRC Part #CLA.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Merit PART No.	Mills PART No.	Sam PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L13	Horiz. Stab. Sat.	760018 ①	TV-163	5210	H-102	RC-110	RTC-5522	H5-5	WLC-32②

① Chassis 353 uses Part #760017 in this application. ② Disregard Tap.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA HOFFMAN PART No.	Hallodrson PART No.	Merit PART No.	Sam PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T1	117V@ 1.8A	580 VCT @ 200A	6V@ 3.0A	716030-1 ①						B-80BC②
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ .6A	6.3V@ 8.5A								

① Alternate Part Number 716020.
② Phase And Parallel 5A And 5A (6.3V) Windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Hallodrson PART No.	Merit PART No.	Sam PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Output	719010							
T3	Yoke-Horiz. (13MHz)	790010 ①	Y-48 ③④		Y-110 ③④		DY-37A ③④⑤	Y-48 ③④⑤	Y-60 ⑤
	110° - Vert. (13MHz)								
	Yoke	790011 ②							YC-110
	Rear Cover and Centering Device	464003							
T4	Horiz. Output	783010	FLY-150*▽	HVO-118*▽	X186 *		HO-280 * FLY-150*▽		D-160 *
	Horiz. Output	782009 ③	FLY-150 ** ▽	HVO-118 ** ▽	X186 ** ▽		HO-280** FLY-150 ** ▽		D-160 **

① Used in 17" Models.
② Used in 21" and 23" Models.
③ Connect yoke terminal #3 to plug #3; Yoke terminal #1 and #2 to plug #6; Yoke terminal #10 to plug #8.
④ Use original damping network.
⑤ Drill new mounting hole(s).
⑥ Use original yoke plug and connect same as original.
⑦ Used in 23" Models.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Hallodrson Replacement Connections	Merit Replacement Connections	Sam Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
8	5	5	5		5	5	5 or 8
6	4	4	4		4	4	4
5	3	3	3		3	3	3
3	1	1	1		1	1	1

**HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Hallodrson Replacement Connections	Merit Replacement Connections	Sam Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
8	5	5			5	5	5 or 8
7	4	4			4	4	4
6	3	3			3	3	3
1	1	1			1	1	1

TRANSFORMER, (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	HOFFMAN PART No.	REPLACEMENT DATA Hallodrson PART No.	Merit PART No.	Tom PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T5	5300Ω	3-4Ω	726025	24548	A-3026	AU-601	A-3877	24549	S-6X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP	REPLACEMENT DATA HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	3"x 5" PM		3-4Ω	709068 *	3SA05	* Used in Models K1367, KR1367, W1367, WR1367, M1367, MR1367, B1367, BR1367, SP1367, SPR1367, R1375, KR1375, W1375, WR1375, M1375, MR1375, B1375, BR1375, SP1375, SPR1375, W3725, M3725, B3725, SP3725
	4"x 6" PM		3-4Ω	709069 *	4SA1	@ Used in Models W3745, M3749, B3745, SP3745
	8" PM			709910 *		+ Used in Models W3725, M3729, B3725, SP3725

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No.	HOLDER	LITTELFUSE PART No.	HOLDER	BUSS PART No.	HOLDER
M1	3AG	3.2A 125V S/B F/T	954422		31503.2 (3AG 125V S/ B F/T)		MDV 3 2/10	

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Tuner	710031	VHF, Ch. 2&3
	Tuner	710031	VHF, Ch. 5&6
	Tuner	710010	VHF, Ch. 7&8
	Tuner	712013	UHF
M3	Antenna	938006	72'Ω REPLACEMENT TYPE #TA378
	Lite Scope Ass'y	978003	Includes Lite Scope Cell (Part #978001)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Lens (Safety Glass)	450009	Note 1
Mask	458012	Lens Mount, Sides, Note 2
Mask	458013	Lens Mount, Lower, Upper, Note 2
Mask	523308	Lens Mount, Sides, Note 3
Mask	458021	Lens Mount, Lower, Note 1
Mask	458022	Lens Mount, Upper, Note 1
Mask	452006	Note 1
Mask	458005	Includes Lens Assembly, Note 2
Mask	527002	Walnut, Models W3725, W3745, W3753
Mask	527001	Mahogany, Models M3725, M3745, M3753
Mask	527004	Blonde, Models B3725, B3745, B3753
Mask	527005	Maple, Models SP3725 and SP3745
Channel Indicator	519030	Wheel Assembly, Models K1367, W1367, M1367, B1367, SP1367, K1371, W1371, M1371, B1371, SP1371
Channel Indicator	464007	Cover Assembly, Models K1367, W1367, M1367, B1367, SP1367, K1371, W1371, M1371, B1371, SP1371
Knob	[redacted]	Note 3
Knob	480070	Channel Selector, Models K1367, W1367, M1367, B1367, SP1367, K1371, W1371, M1371, B1371, SP1371
Knob	498014	Fine Tuning, Note 1, Note 3
Knob	498004	Fine Tuning, Note 2
Knob	508017	Volume, Brightness, Note 1, 2, 3
Knob	512024	Contrast, Vertical Hold, Note 1, 2, & 3
Pushbutton	500050	Channel Change, Models K1367, W1367, M1367, B1367, KRP1367, K1371, W1371, M1371, B1371, SP1371
Cabinet	548039	Black, Models K1367, KR1367
Cabinet	548044	Black, Models K1371, KR1371
Cabinet	548040	Walnut, Models W1367, WR1367
Cabinet	548045	Walnut, Models W1371, WR1371
Cabinet	548041	Mahogany, Models M1367, MR1367
Cabinet	548046	Mahogany, Models M1371, MR1371
Cabinet	548042	Blonde, Models B1367, BR1367
Cabinet	548047	Blonde, Models B1371, BR1371
Cabinet	548043	Maple, Models SP1367, SPR1367
Cabinet	548048	Maple, Models SP1371, SPR1371
Cabinet	356003	Walnut, Model W3725
Cabinet	354079	Walnut, Model W3745
Cabinet	353078	Walnut, Model W3753
Cabinet	352008	Mahogany, Model M3725
Cabinet	354080	Mahogany, Model M3745
Cabinet	353077	Mahogany, Model M3753
Cabinet	352007	Blonde, Model B3725
Cabinet	354081	Blonde, Model B3745
Cabinet	353076	Blonde, Model B3753
Cabinet	[redacted]	Maple, Model SP3725
Cabinet	[redacted]	Maple, Model SP3745

Note 1. Used in Models: K1371, W1371, M1371, B1371, SP1371, KR1371, WR1371, MR1371, BR1371, SPR1371.
Note 2. Used in Models: K1367, W1367, M1367, B1367, SP1367, KR1367, WR1367, MR1367, BR1367, SPR1367.
Note 3. Used in Models: W3725, M3725, B3725, SP3725, W3745, M3745, B3745, SP3745, W3753, M3753, B3753, SP3753.

WIRING DATA

High Voltage Lead	Use BELDEN No. 8809
Shielded Hook-up Wire	Use BELDEN No. 8303 (Single Conductor) 8726 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8474
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8375
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8486 (Round) - 5 Conductor 8488 (Round) - 6 Conductor

HOFFMAN CHASSIS 351, 352, 353, 307002, 307003

FOLDER 1

REMOTE CONTROL RECEIVER AND POWER TUNING PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V18	1st 40KC Amp. - 2nd 40KC Amp.	12AX7
V19	3rd 40KC Amp. - 4th 50KC Amp.	12AX7

ITEM No.	USE	TYPE
V20	40KC Driver - Channel Selector Relay Control	6CG7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C75A	▲5	200	856706	AFH2-46	B0362	WP230.9	TMD-46	TVL-2748	
B	■5	200							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C76	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C77	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C78	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C79	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C80	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C81	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C82	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C83	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C84	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C85	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C86	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C87	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R92	1meg	
R93	1meg	
R94	68K	
R95	100K	
R96	470Ω	
R97	100K	
R98	100K	
R99	100K	

ITEM No.	RATING	REMARKS
R100	100K	
R101	100K	
R102	100K	
R103	100K	
R104	330K	
R105	39K	
R106	10meg	
R107	220K	

ITEM No.	RATING	REMARKS
R108	100K	
R109	2.2meg	
R110	1meg	
R111	15K 3W	
R112	1800Ω 1W	
R113	3300Ω	
R114	10Ω	
R115	15Ω	Note 1

Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L14	40.75MC IF	762026						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T6	117V@ .16A	130V@ .015A	6.3V@ 1.3A	716029						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M4	1¼" Length of #26 Wire.							

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA HOFFMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M5	.015A	746003 ◆	RE504 ◆	1N1764 ◆	2F4 ◆	SR200 ◆	◆ Silicon Diode
M6		744005 *					* Selenium Diode

REMOTE CONTROL RECEIVER AND POWER TUNING PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M7	Switch	900009	Power Tuning
M8	Motor-Switch Assembly	715009	Includes Muting Switch, Remote Defeat Switch, Pre-selector Defeat Switch (Motor)
M9	Remote Off-On Assembly	904007	Includes Remote Off-On Switch
M10	Pre-selector Assembly	904006	Includes Pre-selector Switch
M11	Receiver Transducer		
M12	Relay	998004	Channel Selector Control

REMOTE CONTROL TRANSMITTER PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N406	Oscillator		2N406	2N633	2N406	PNP

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C88	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C89	390 5%		1469-00033		5R5T33	CM-19B-391J	MCE243	MS-339

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R116	18K	

ITEM No.	RATING	REMARKS

ITEM No.	RATING	REMARKS

COILS (RF-IF)

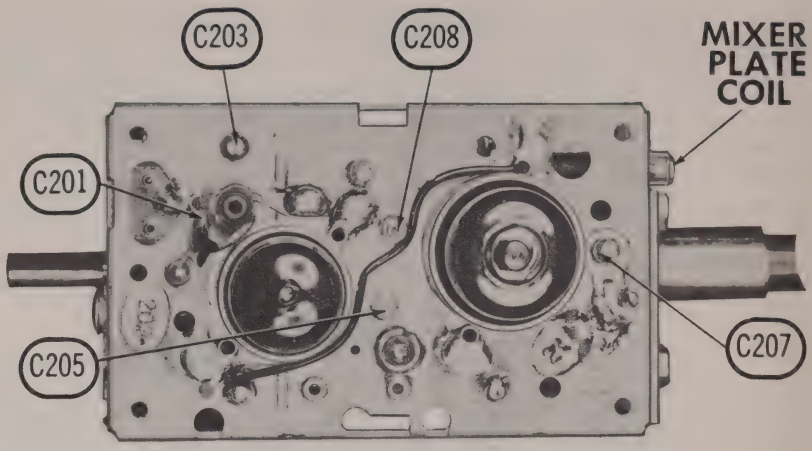
ITEM No.	USE	REPLACEMENT DATA						NOTES
		HOFFMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L15	Osc. Coil	768018						

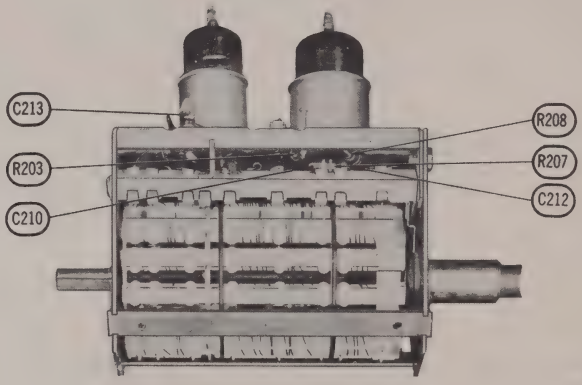
BATTERIES

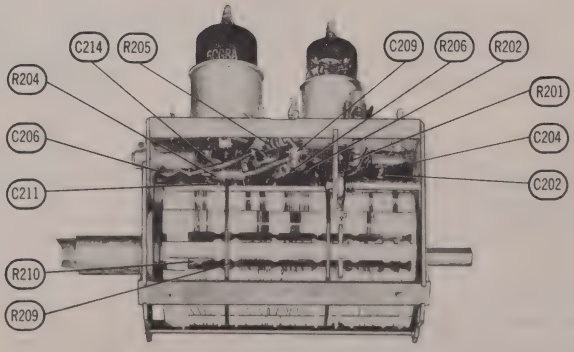
ITEM No.	VOLTAGE	HOFFMAN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M13	4.2V	930004				E-163		TR-163	

MISCELLANEOUS

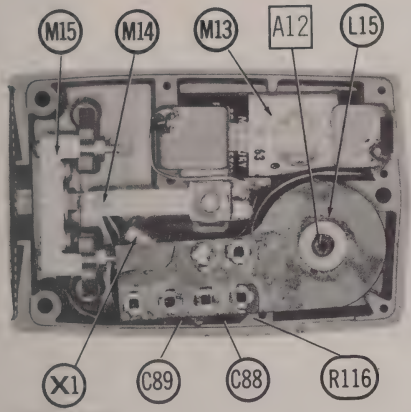
ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M14	Switch	976005	Pushbutton Type
M15	Sonic Transducer		



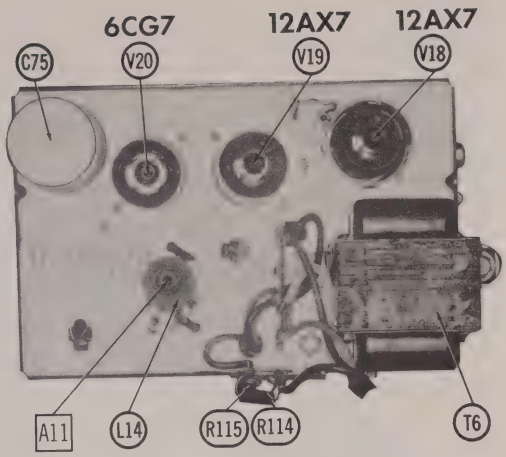




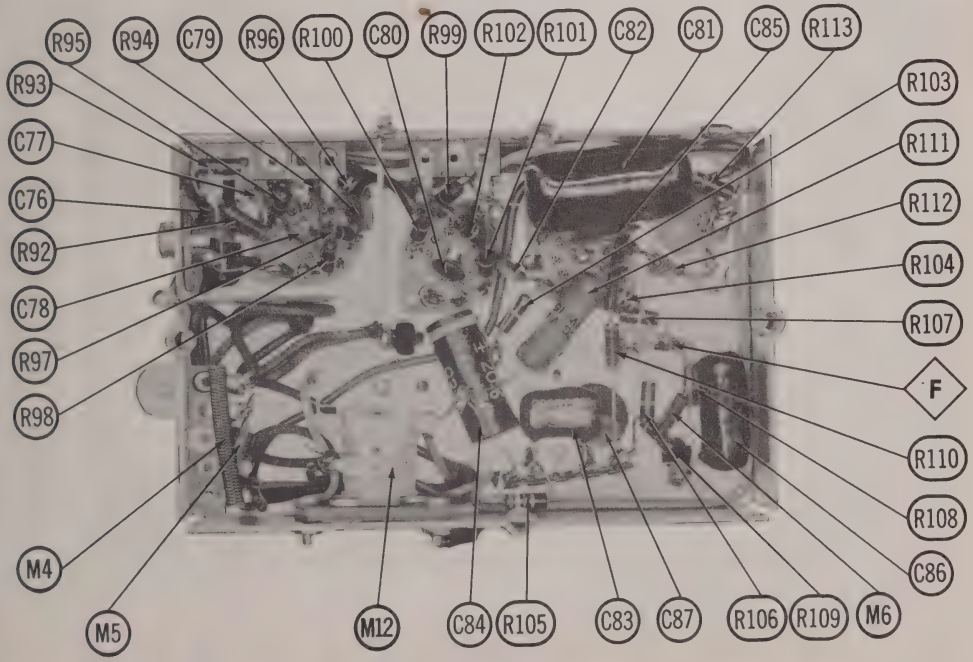
VHF TUNER 710023



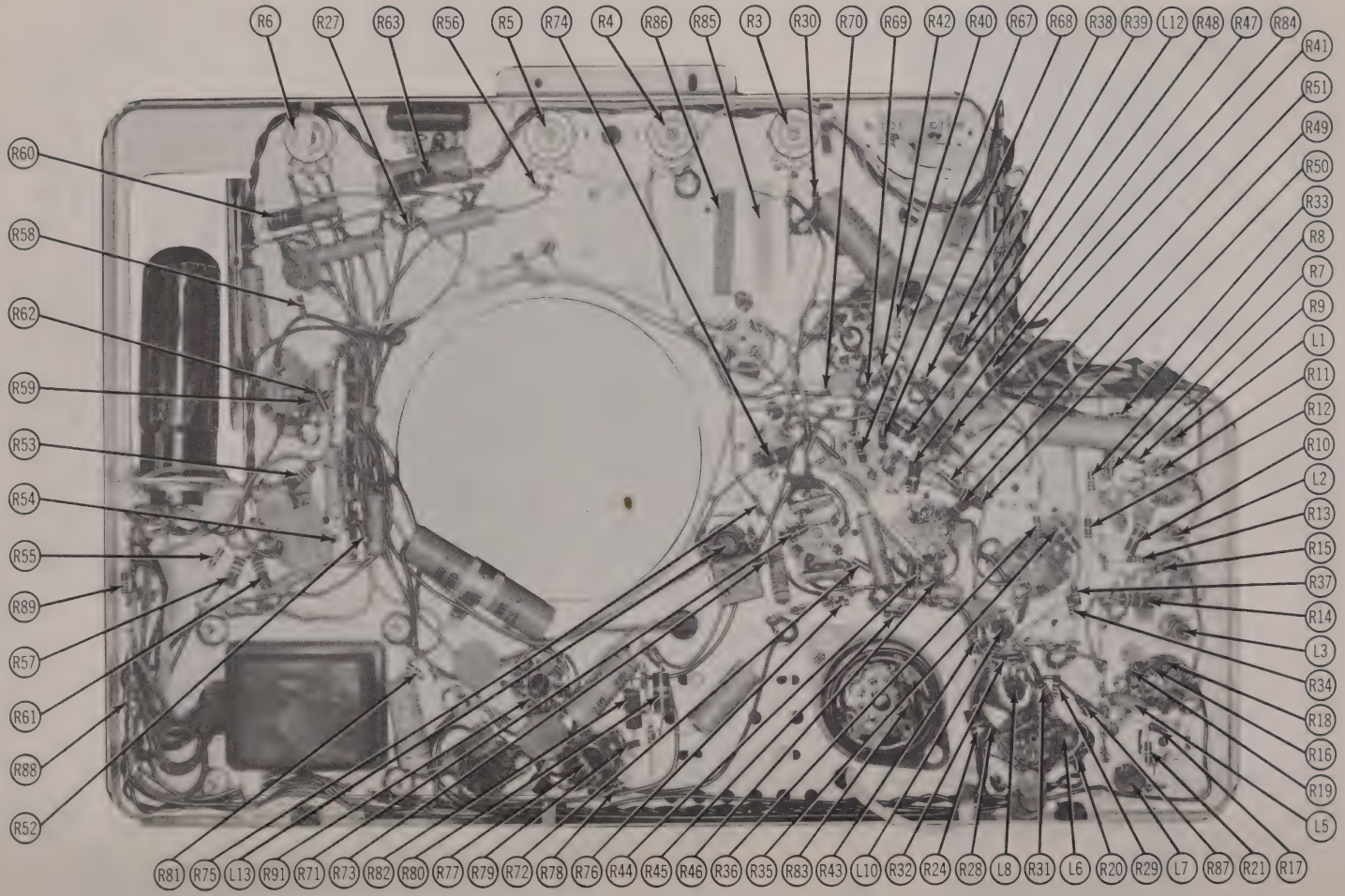
REMOTE CONTROL
TRANSMITTER 307002



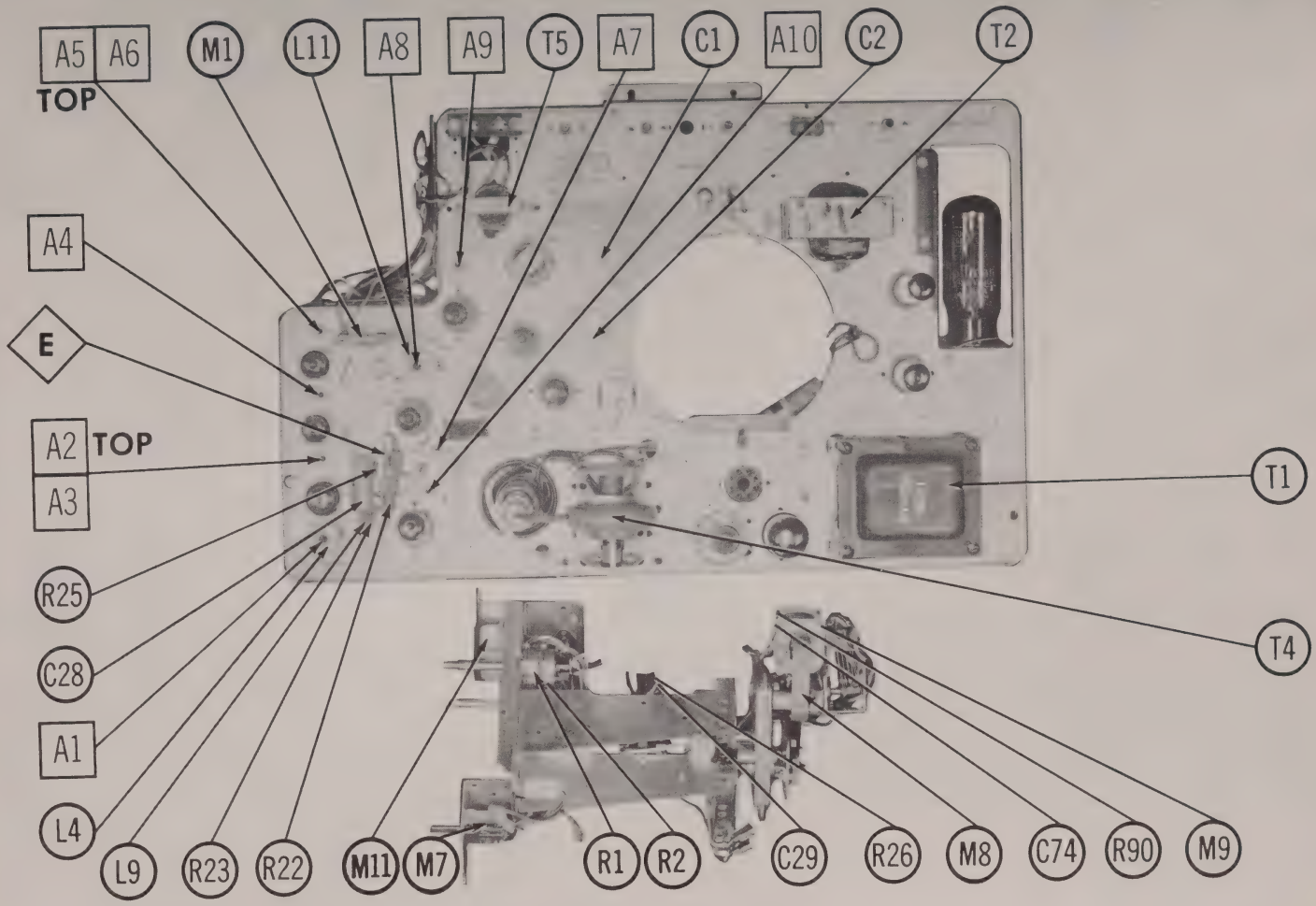
REMOTE CONTROL
RECEIVER 307003 - TOP VIEW



REMOTE CONTROL RECEIVER 307003 - BOTTOM VIEW



TV CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



TV CHASSIS - TOP VIEW

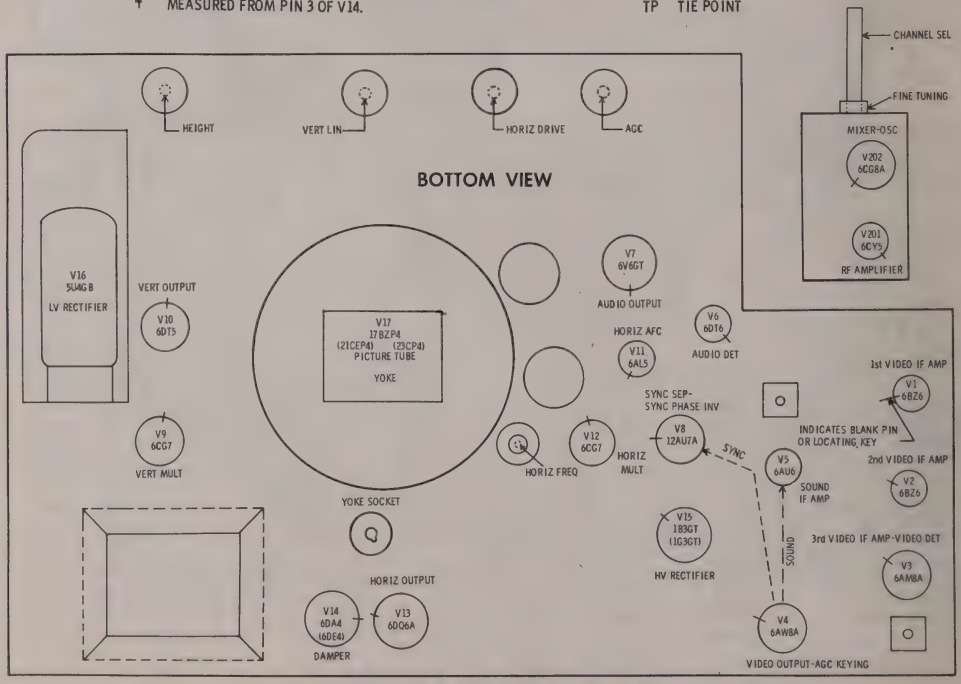
HOFFMAN CHASSIS 351,
352, 353, 307002, 307003,

RESISTANCE MEASUREMENTS

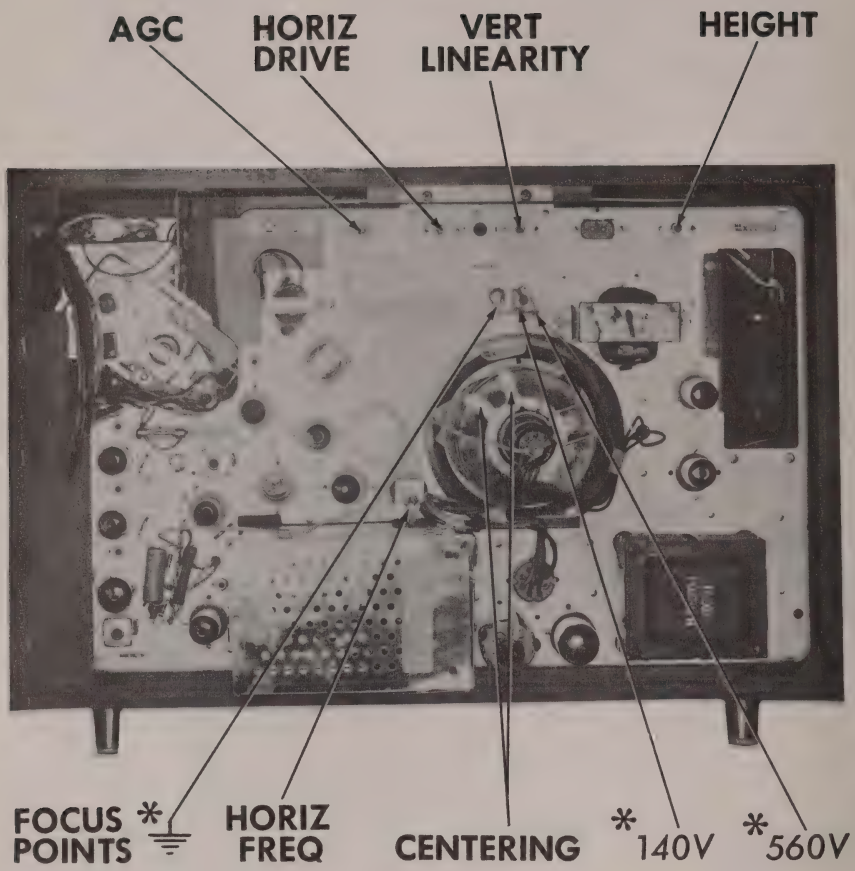
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	• 100K	47Ω	.1Ω	0Ω	†6800Ω	†6800Ω	0Ω		
V2	6BZ6	• 100K	47Ω	.1Ω	0Ω	†6800Ω	†6800Ω	0Ω		
V3	6AM8A	150Ω	.2Ω	†24K	.1Ω	0Ω	†1100Ω	.2Ω	4700Ω	0Ω
V4	6AW8A	†120Ω	†940Ω	• 550K	700K	700K	• 30Ω	4700Ω	†22K	†4800Ω
V5	6AU6	47K	0Ω	.1Ω	0Ω	†7700Ω	†47K	0Ω		
V6	6DT6	5Ω	820Ω	.1Ω	0Ω	†890K	†7700Ω	560K		
V7	6V6GT	NC	0Ω	†420Ω	†2100Ω	0Ω	NC	.1Ω	390Ω	
V8	12AU7A	†4500Ω	†120K	4500Ω	.1Ω	.1Ω	†120K	2.5meg	0Ω	0Ω
V9	6CG7	†68K	60K	1000Ω	0Ω	.1Ω	• ¶1meg	• 2meg	1000Ω	0Ω
V10	6DT5	†3300Ω	NC	• 2.2meg	0Ω	.1Ω	• 2.2meg	0Ω	NC	†420Ω
V11	6AL5	15Ω	15Ω	.1Ω	0Ω	320K	0Ω	320K		
V12	6CG7	†8000Ω	690K	1500Ω	0Ω	.1Ω	†120K	100K	1500Ω	0Ω
V13	6DQ6A	NC	0Ω	NC	†10K	470K	TP	.1Ω	0Ω	TOP CAP †10Ω
V14	6DA4	NC	NC	¶1meg	NC	†120Ω	NC	.1Ω	0Ω	
V15	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP †335Ω
V16	5U4GB	NC	¶	NC	21Ω	NC	20Ω	NC	¶	
V17	17BZP4	0Ω	22K	†68K	†2100Ω	NC	NC	• 1meg	.1Ω	
V201	6CY5	850K	0Ω	0Ω	.1Ω	†3600Ω	†12K	0Ω		
V202	6CG8A	15K	†12K	0Ω	.1Ω	0Ω	†5800Ω	†50K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V16.
† MEASURED FROM PIN 3 OF V14.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive Control until white lines disappear.

If Horizontal Drive was adjusted, tune in a TV station and repeat Horizontal Hold adjustments. Check horizontal sync by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL MODEL MR1367

1. Remove 11 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs from front.
3. Remove picture tube socket, yoke plug, and speaker leads.
4. Remove 2 chassis bolts at bottom of the cabinet and 2 screws at top of the chassis.
5. Tilt chassis forward and remove.

PICTURE TUBE REMOVAL

1. Follow steps 1 and 3 of "TV Chassis Removal".
2. Remove 2 screws at bottom of cabinet. Remove wood strip by pulling down on the bottom of the mask.
3. Remove the Phillips screws from the upper mask strip. Remove 4 screws holding picture tube mounting bracket.
4. Remove picture tube out front.

PHOTOFACT® Folder

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

MODEL 2DC1130A

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

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PHOTOFACT® Folder

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 2DC1130A

1. Remove 8 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs on front of cabinet.
3. Remove 4 screws holding control panel in front (with tuner on panel).
4. Remove speaker leads, yoke plug, picture tube ground lead, and high voltage lead.
5. Remove 4 chassis bolts.
6. Remove chassis.

PICTURE TUBE REMOVAL

1. It is necessary to remove chassis for picture tube removal. (See "Chassis Removal".)
2. Remove 4 screws at top of cabinet holding picture tube mounting bracket and 2 screws at bottom of cabinet.
3. Pull picture tube straight out.

MODEL 2DC1130A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Truetone Models 2DC1130A, 2DC1132A, 2DC1134A
SUPPLIER	Western Auto Supply Co., 2107 Grande Avenue, Kansas City 8, Mo.
TYPE SET	Television Receiver
TUBES	VHF - Fourteen, UHF - Fifteen
POWER SUPPLY	105-125 Volts AC, 60 Cycle RATING 145 Watts, 1.35 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 5 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE DEVICE

A 7.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Range control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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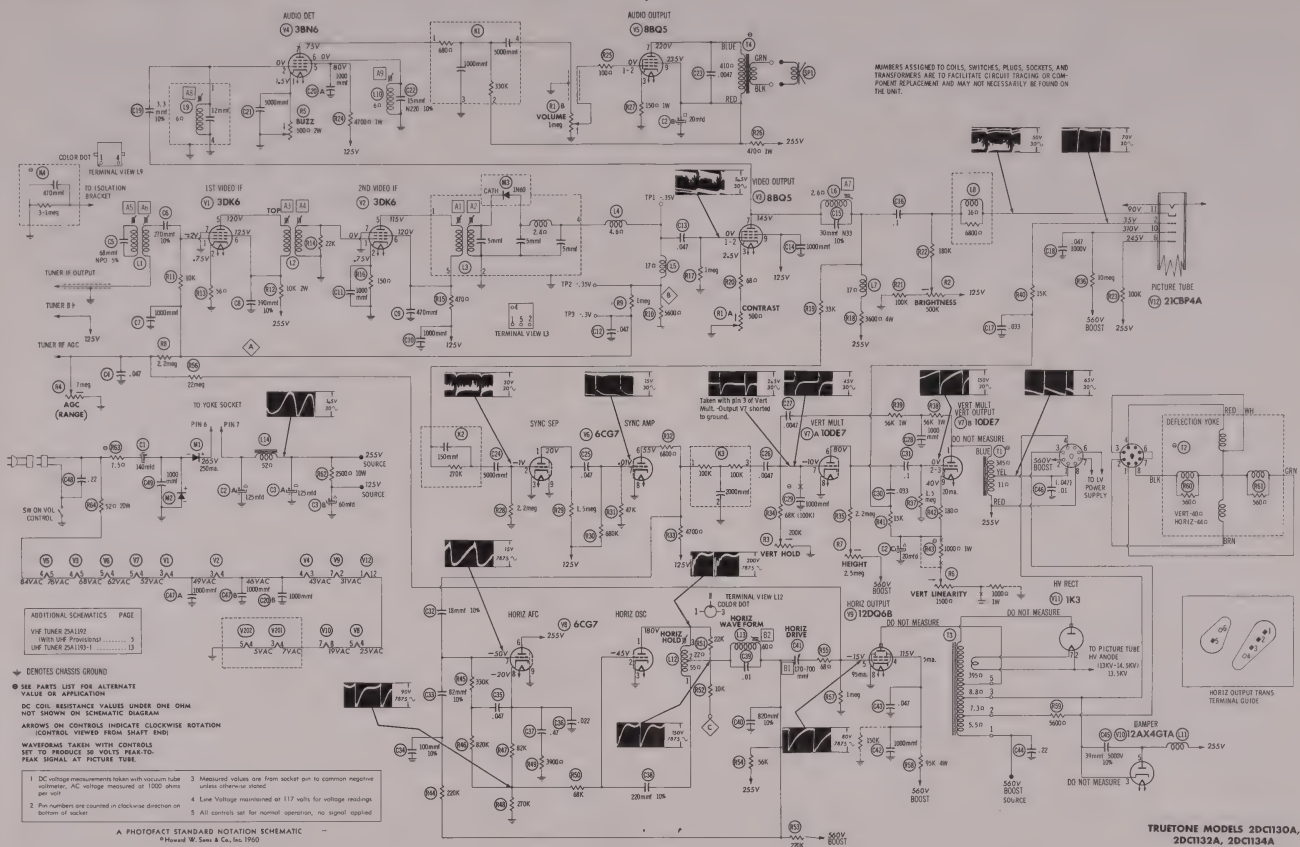
SET 499 FOLDER 2


AUDIO DET
V4 3BN6
AUDIO OUTPUT
V6 8BQ5
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
COLOR DOT
TERMINAL VIEW L9
TO ISOLATION BRACKET
1ST VIDEO IF
V1 3DK6
2ND VIDEO IF
V2 3DK6
VIDEO OUTPUT
V7 8BQ5
TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
AGC (RANGE)
TO YOKE SOCKET
PIN 6
PIN 7
SW ON VOL CONTROL
SYNC SEP
V5 6CG7
SYNC AMP
Taken with pin 9 of Vert Mult. Output VT shorted to ground.
VERT MULT
V7A 10DE7
VERT MULT
V7B 10DE7
VERT OUTPUT
DO NOT MEASURE
DEFLECTION YOKE
TO LV POWER SUPPLY
VERT 40Ω
HORIZ 44Ω
VERT HOLD
HEIGHT
VERT LINEARITY
HV RECT
V11 1K3
HORIZ AFC
V8 6CG7
HORIZ OSC
HORIZ HOLD
HORIZ WAVE FORM
HORIZ DRIVE
TERMINAL VIEW L12
COLOR DOT
HORIZ OUTPUT
V9 12DQ68
DO NOT MEASURE
TO PICTURE TUBE HV ANODE
13KV-14.5KV
13.5KV
HORIZ OUTPUT TRANS TERMINAL GUIDE
DAMPER
V10 12AX4GTA
DO NOT MEASURE
560V BOOST SOURCE
CONTRAST
BRIGHTNESS
VOLUME
PICTURE TUBE
V12 21CBP4A
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 25A1192 (With UHF Provisions) 5
UHF TUNER 25A1193-1 13
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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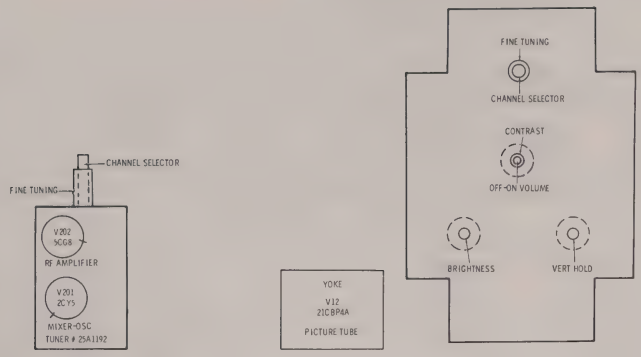
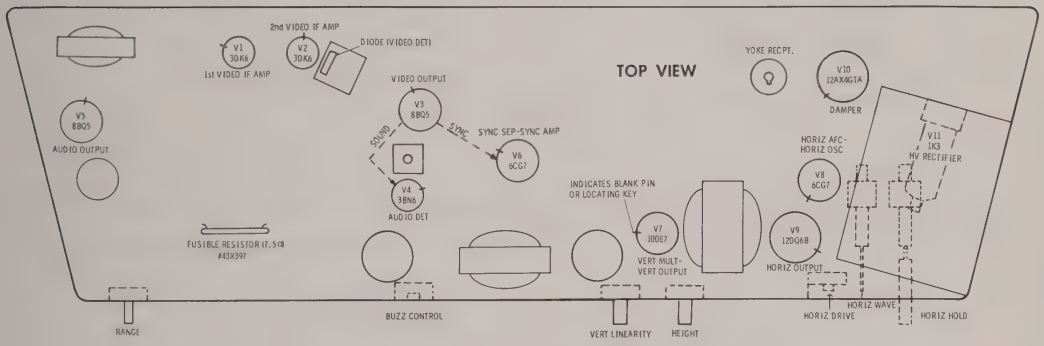
TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

TUBE PLACEMENT CHART





TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

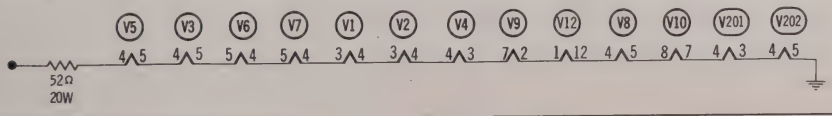
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V9, V10, Rectifiers (B+)
Vert. off freq. V7
Horiz. off freq. V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3
Has pic, no sound V4, V5

SYNC FAILURE
No vert. sync V6
No horiz. sync V6
No vert. or horiz. sync V6

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (A) . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B) . Low side to chassis. (Across Video Det. load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	"	High side to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

FIG.1

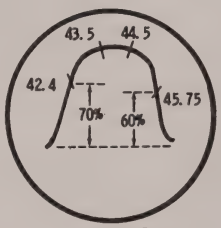


FIG. 2

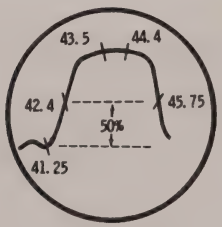
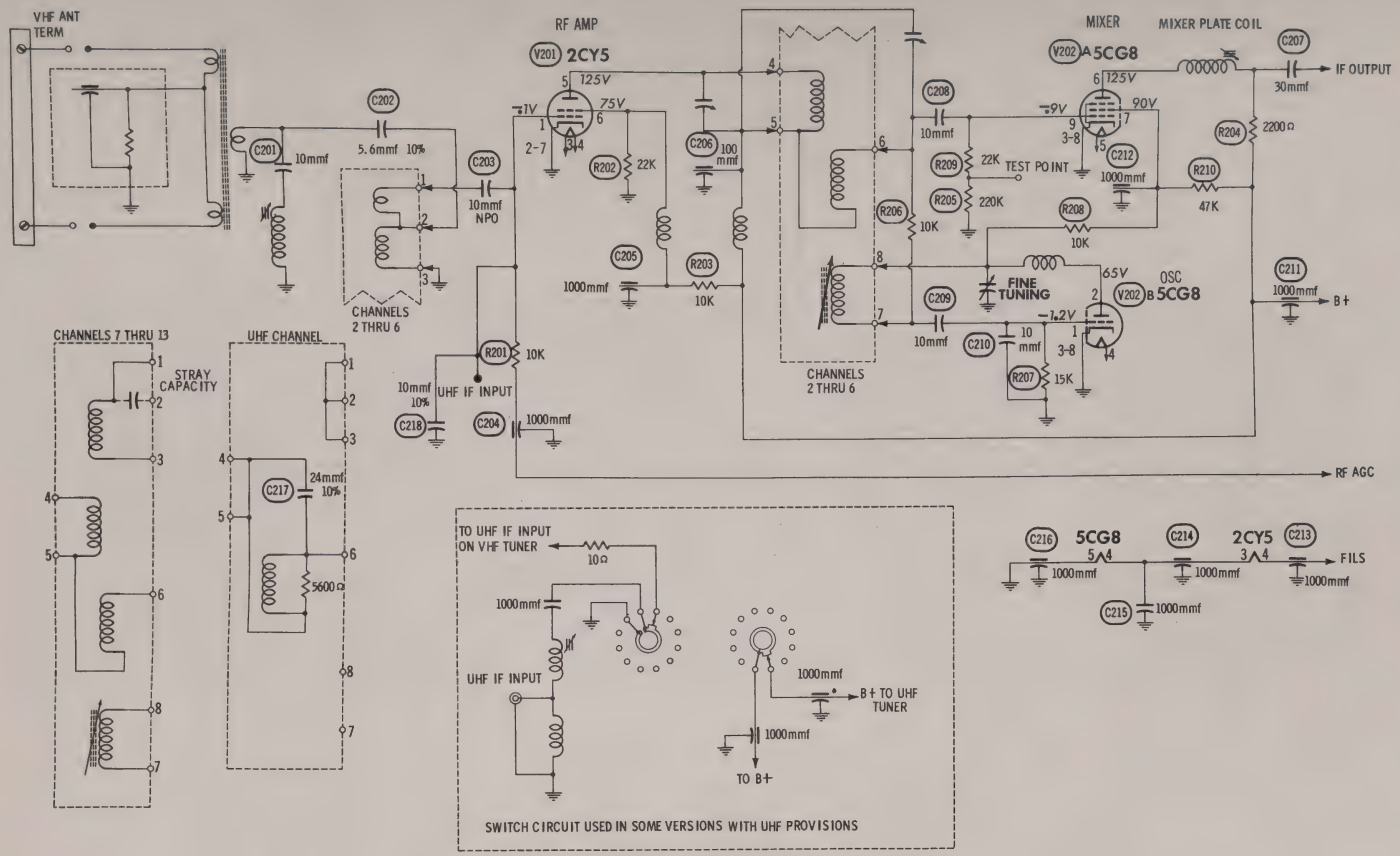


FIG. 3



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF Provisions - 25A1192

TRUETONE MODELS 2DC1130A, 2DC1132A, 2DC1134A

TUNER PARTS LIST AND DESCRIPTIONS

25A1192

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%							10TCC-V5.6
C203	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	100		EF-0001	MFT-100				
C207	30							
C208	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C209	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	1000		EF-001	MFT-1000		CCF-102	CT280A	
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	24 10%		NPO-SI 24	TCZ-24	C10Q24C	CCTO-240	CNO-427	10TCC-Q25
C218	10 10%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	10K	
R202	22K	
R203	10K	
R204	2200Ω	

ITEM No.	RATING	REMARKS
R205	220K	
R206	10K	
R207	15K	
R208	10K	

ITEM No.	RATING	REMARKS
R209	22K	
R210	47K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA
K201	VHF Antenna Filter			

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

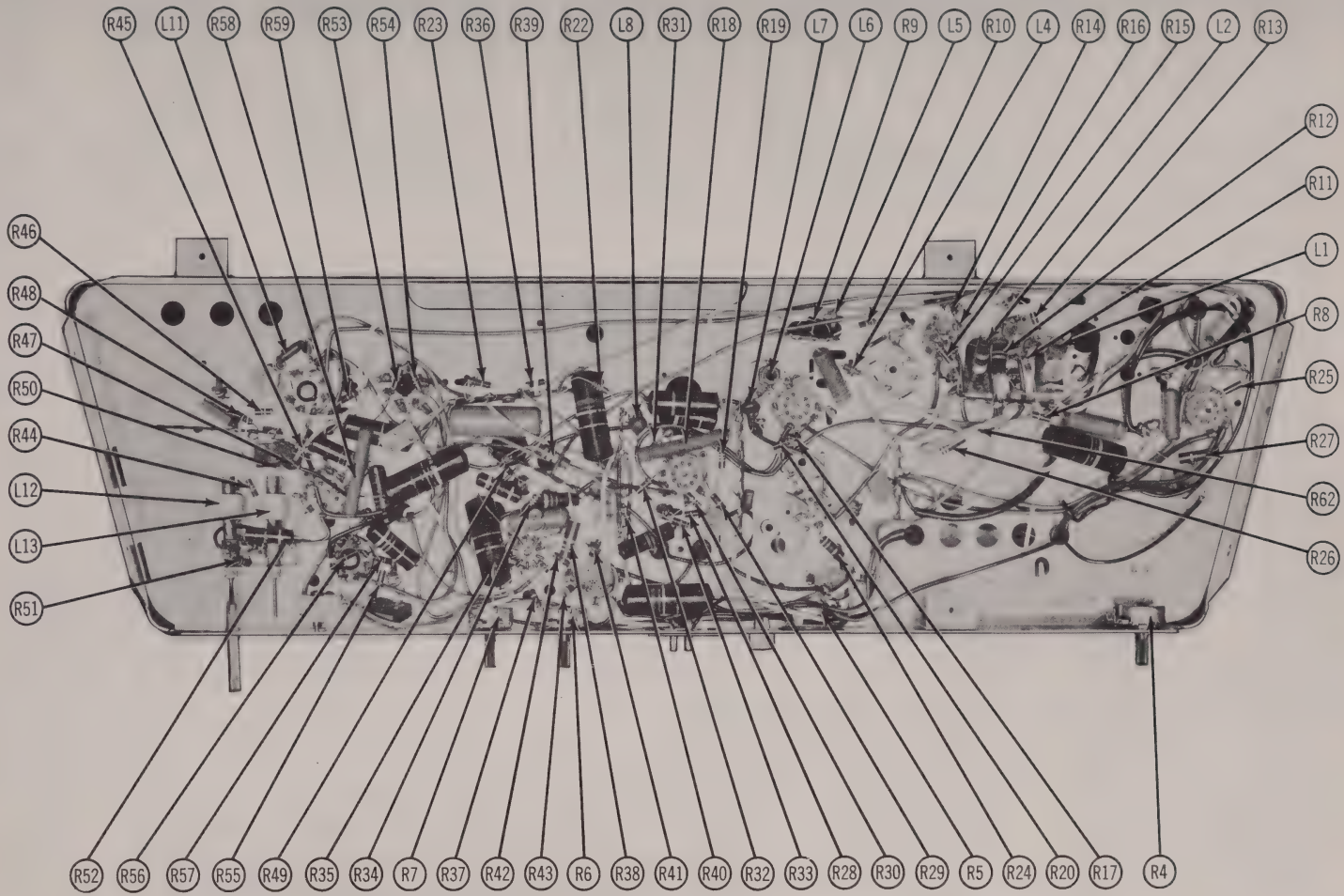
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS / GENERAL ELECTRIC — USE	TYPE	ITEM No.	RAYTHEON / SYLVANIA — USE	TYPE
V1	1st Video IF Amp.	3DK3	V7	Vert. Mult.-Vert.Output	10DE7
V2	2nd Video IF Amp.	3DK3	V8	Horiz. AFC - Horiz. Osc.	6CQ7
V3	Video Output	6BQ6	V9	Horiz. Output	1X2CQ8B
V4	Audio Det.	3BN6	V10	Damper	1X2AG7A
V5	Audio Output	6BQ6	V11	HV Rectifier	1K3
V6	Sync Sep. - Sync Amp.	6CG7			

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	ECA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V12	21CBP4A	21CBP4A ①	21CBP4A ①	21CBP4/20CBP4A ②	21CBP4/21CBP4A ②	① Aluminized ② Silver Screen "SS"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	45X44	AFH8-33	XAU8H1	FPU7	TMH-1370	TVL-1438	
C3A	125	300	45X45H	AFH4-03-60	XC0733.3	FP333.15	TMQ-11T	TVLB-3074.3*	
B	30	300							
C	30	50							
C3A	150	300	45X46T	AFH3-09-63	D0046	FP336.75	TMH-4H	TVL-3574.6	
B	60	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.047	200V		P288N-047	DD-503	CUB4M7	42DP-1-473	MFT-4547	57M-4S7
C5	68	NPO 5%			DYZ-68	CU6S6C	CCTO-680	CMO-469	10TCC-Q68
C6	270	10%		DL-270	DD-271	LU2T27	CCD-271	GF2S7	10TA-T27
C7	1000			BPD-001	DD-503	BYA10DL	CCD-102	B-B0	56K-D0
C8	250			DL-250	DD-501	LU2T25	CCD-251	GF309	10TA-T29
C9	470			BPD-00047	DD-471	BUA5T47	CCD-471	B-547	10TB-T47
C10	1000			BPD-001	DD-503	BYA10DL	CCD-102	B-1B0	56K-D0
C11	1000			BPD-001	DD-503	BYA10DL	CCD-102	B-1B0	56K-D0
C12	.047	200V		P288N-047	DD-503	CUB3M47	42DP-3-473	GEM-4147	57M-947
C13	.047	200V		P288N-047	DD-503	CUB3M47	42DP-3-473	GEM-4147	57M-947
C14	1000			BPD-001	DD-503	BYA10DL	CCD-102	B-1B0	56K-D0
C15	30	N33 10%							
C16	.1	400V		P488N-1	DF-104	CUB4P1	42DP-3-104	GEM-401	67M-P1
C17	.033	200V		P288N-033	DD-333	CUB6S3	42DP-2-333	GEM-4133	57M-S33
C18	.047	1000V		P108N-047		CUB6S47	16DP-5-473	GEM-11147	127M-947
C19	3.3	10%		NPO-3R3	TCS-3R3	C0V33	CC0-3R3	CNC-433	10TCC-V33
C20A	1000			BPD-EE001	DDB-102	BYD6DH	(CCD-102 * CCD-102	B2EE10	56K-ED10
B	1000			BPD-001	DD-501	BYA10D6	CCD-502	B-B50	56K-D50
C21	5000						*		10TCH-Q55
C22	30	N220 10%							
C23	.0047	600V		P688N-0047	D6-472	CUB6D47	62DP-1-472	GEM-6547	67M-D47
C24	5000			BPD-005	DD-503	BYA10D6	CCD-502	B-B50	56K-D50
C25	.047	400V		P488N-047	DD-502	CUB4M47	42DP-3-473	GEM-4147	67M-947
C26	.0047	600V		P688N-0047	D6-472	CUB6D47	62DP-1-472	GEM-6547	67M-D47
C27	.0047	400V		P488N-047	D6-472	CUB6D47	62DP-1-473	GEM-6347	67M-D47
C28	1000			BPD-001	DD-503	BYA10DL	CCD-102	B-1B0	56K-D0
C29	1000		Note 1	BPD-001	DD-503	BYA10DL	CCD-102	B-1B0	56K-D0
C30	.033	600V		P688N-033	D6-333	CUB6S3	62DP-2-333	GEM-6133	67M-S33
C31	.1	600V		P688N-1	DF-104	CUB6P1	62DP-4-104	GEM-601	67M-P1
C32	15	10%		1469-00015	TCS-15	22R5Q15	CM-1Y9-150K	CNC-415	MS-415
C33	82	10%		1469-00082	TCS-82	22R5Q82	CM-1E5-820K	CNC-482	MS-482
C34	100	10%		1469-001	TCS-100	22R5T1	CM-1H9-101K	MCB-325	MS-H
C35	.047	200V		P288N-047	DD-503	CUB3M47	42DP-3-473	GEM-4147	57M-947
C36	.012	200V		P288N-022	DD-303	CUB4S22	42DP-3-223	GEM-4123	57M-P23
C37	.047	400V		P288N-47		CUB3P47	42DP-3-473	GEM-4147	57M-947
C38	220	10%		1469-00022	TCS-220	22R5T22	CM-1H9-221K	CNC-322	MS-322
C39	.01	400V		P488N-01	DE-103	CUB4E	42DP-1-103	GEM-411	67M-E1
C40	820	10%		1469-00061		22R5T82	CM-1H9-821K	MCB-325	MS-H2
C41	175-700		@TA378				463		
C42	1000			BPD-001	DD-101	BYA10DL	CCD-102	B-2D	56K-D0
C43	.047	400V		P488N-047	DD-503	CUB4M47	42DP-3-473	GEM-4147	67M-947
C44	22	600V		P488N-22		CUB4P22	42DP-3-226	GEM-4022	67M-P22
C45	39	5000V 10%					RVDM-42-390J		
C46	.01	400V (.047) †		P488N-01	D6-103	CUB4E	42DP-1-103	GEM-411	67M-E
C47A	1000			BPD-EE001	DDB-102	BYD6EH	(CCD-102 * CCD-102	B2EE10	56K-ED10
B	1000			P488N-22		CUB4P22	42DP-3-224	GEM-4022	67M-P22
C48	33	400V		BPD-001	DD-103	BYA10DL	CCD-102	B-2D	56K-D10
C49	1000								

Note 1. May not be used in some versions. † Alternate Value. @ Trustone Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESIS-ANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω		76X37	F1-1				Contrast
B	Imeg			R3-1L	@TV-710		@RE643-8	Volume
C	Switch			KR-1				Power Off-On

CONTROLS (cont)

ITEM No.	RATING: RESIS-ANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R3A	500K		40X462	B-59	A47-500K-S	Q11-153	U50	Brightness
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R3A	200K		40X494	B-48	A47-200K-S	Q11-139	U45	Vert. Hold
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R4	Tmeg		40X463					Range (AGC)
R5	500Ω	2(W)	@3X479			110-500	PPL-500	Buzz
R8A	1000Ω		40X464-3	T7-51J	B47-1500-S	R11-109	PTA151L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	2.5meg		40X466-3	T7-53	B47-2.5meg-S	RLC-2	RU-585	Height
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	

* "RTA-LOC" Equivalent: FC52L, RU161, CR1467, 1B2350, U841.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R8	3.3meg		R27	150Ω 1W		R45	820K	
R9	1meg		R28	2.2meg		R47	82K	
R10	500Ω		R29	1.5meg		R48	270K	
R11	10K		R30	680K		R49	3900Ω	
R12	10K 2W		R31	47K		R50	68K	
R13	56Ω		R32	6800Ω		R51	22K	
R14	22K		R33	4700Ω		R52	10K	
R15	470Ω		R34	68K	100K *	R53	220K	
R16	100Ω		R35	2.2meg		R54	56K	
R17	1meg		R36	10meg		R55	68Ω	
R18	3900 4W	#43X331	R37	1.5meg		R56	22meg	
R19	33K		R38	56K 1W		R57	1meg	
R20	68Ω		R39	56K 1W		R58	82K 4W	RETIRE
R21	100K		R40	15K		R59	5800Ω	
R22	180K		R41	15K		R60	580Ω	
R23	100K		R42	180Ω		R61	560Ω	
R24	4700Ω 1W		R43	1000Ω 1W	①	R62	1500Ω 10W	#43X191
R25	100Ω		R44	220K		R63	7.5Ω	#43X37 ②
R26	470Ω 1W		R45	330K		R64	52Ω 20W	#43X302

* Alternate Value. # Trustone Part Number.
① May not be used in some versions. @ Fusible Type.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
X1	Volume Comp.	1000mmf, 5000mmf, 6800, 330K	76X6	Centralab PC-406
X2	Sync Sep. Grid	150mmf, 39K	76X3	Sprague PSC-5
X3	Vert. Integrator	2000mmf, 100K, 100K	76X9	
X4	Isolation	470mmf, .5-1meg	*	Centralab RC-471 Sprague AC1-1

* Some versions may use 1000mmf (1000V), 220K + 1meg Component Combination (Part #76X18) in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Gramer PART No	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L1A	1st Video IF	3A2456						
B	41.25MC Trap							
L2	2nd Video IF	3A2644						
L3A	3rd Video IF	3A2455						
B	RF Choke		19-3038	19-3038	TV-180	6178	VP-1	30uh
L4	RF Choke	3A2375	19-3038	19-3038	TV-180	6178	VP-1	30uh
L5	Shunt Peaking Coil	3A23	19-3300	19-3300	TV-185	6155		200uh
L6	4.5MC Trap	3A2366	30-1004	30-1004	TV-321	1689	SF-3	
L7	Shunt Peaking Coil	3A2T	19-3300	19-3300	TV-200	6213	VP-7	328uh
L8	Series Peaking Coil	3A45 ①	19-3375 *	19-3375 *	TV-185 *	6130 *	VP-8 *	370uh
L9	Sound Take-off Coil	3A2454	17-1038	17-1038	TV-154	1470-A		
L10	Discriminator Coil	3A2357	30-1005	30-1005	TV-181	6180		
L11	RF Choke	3A2390	19-1001	19-1001	BC-363	4804	VP-9	1.5ch

① Wound on 4800Ω Resistor. * Parallel with 8800Ω Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No	Miller PART No.	Ram PART No	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L23	Horiz. Osc.	3A2666	TV-182	6211				SS-7	
L24	Horiz. Waveform	3A2371	MWC-13	6315	H-103 ①	QRC-104 ①	WC-18	SS-6 ①	WLC-3

① Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Maximum)	DC RES.	INDUCTANCE @ CURRENT	TRUETONE PART No.	REPLACEMENT DATA: Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L44	.250A	52Ω	.6 Hy.	52X96-11	28C44	C-2996 ①	F-801 ①	C-2343	28C44	C-28X

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T1	Vert. Output	51X307-1A	28S73 ②	A-2855	V-307 ②③	VO38 ①	VO-108	28S73 ②	A-143X ③
T2	All Vert. Output	51X307			MO-8 ⑦			T-45 ⑤	T-45 & NWI ⑤
	Yoke Horiz. (30MC) (90°) Vert. (39MH)	3A3455-B ⑤	T-45 ⑤						YC-113
	All Yoke	3A2458							
	Rear Cover and Centering Device	2A435							
	Yoke Clamp	303X81							
T3	Horiz. Output	53X399							

① Connect as autoformer. ② Cut and tape red/black lead.
③ Drill new mounting hole(s). ④ Includes Resistors R80 and R81.
⑤ Remove jumper from terminal #3 to #6. Connect yoke terminals #1 to plug pin #1; terminals #2 and #7 to pin plug #2; terminal #3 to plug pin #1; terminal #4 to plug pin #3; terminal #4 to plug pin #4. Use original rear cover and centering device. Remove horizontal damping capacitor.
⑥ Connect yoke terminal #3 to plug pin #4; terminals #3 and #7 to plug pin #3; terminal #5 to plug pin #3; terminal #4 to plug pin #1; terminal #6 to plug pin #6.
⑦ Connect plug same as original.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T4	6600Ω	3-4Ω	51X306A ①	24H81	A-3025	AU-601	A-3977	24H81	S-6X	① Alternate Part #51X306

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	12A537-1	5A07	

RECTIFIERS

ITEM No.	RATING: CURRENT (Maximum)	REPLACEMENT DATA: TRUETONE PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M5	.250A	66X23	R2504	1N1764	F6	SR5500	Silicon
M21	.250A	66X23	R2504	1N1764	F6	SR5500	Silicon

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TRUETONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	1N60		1N60	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	TRUTONE PART No.	NOTES
M4	Tuner	25A1292	VHF, STANDARD COIL REPLACEMENT Type #GG-422B/A
	Tuner	25A1193-1	UHF

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

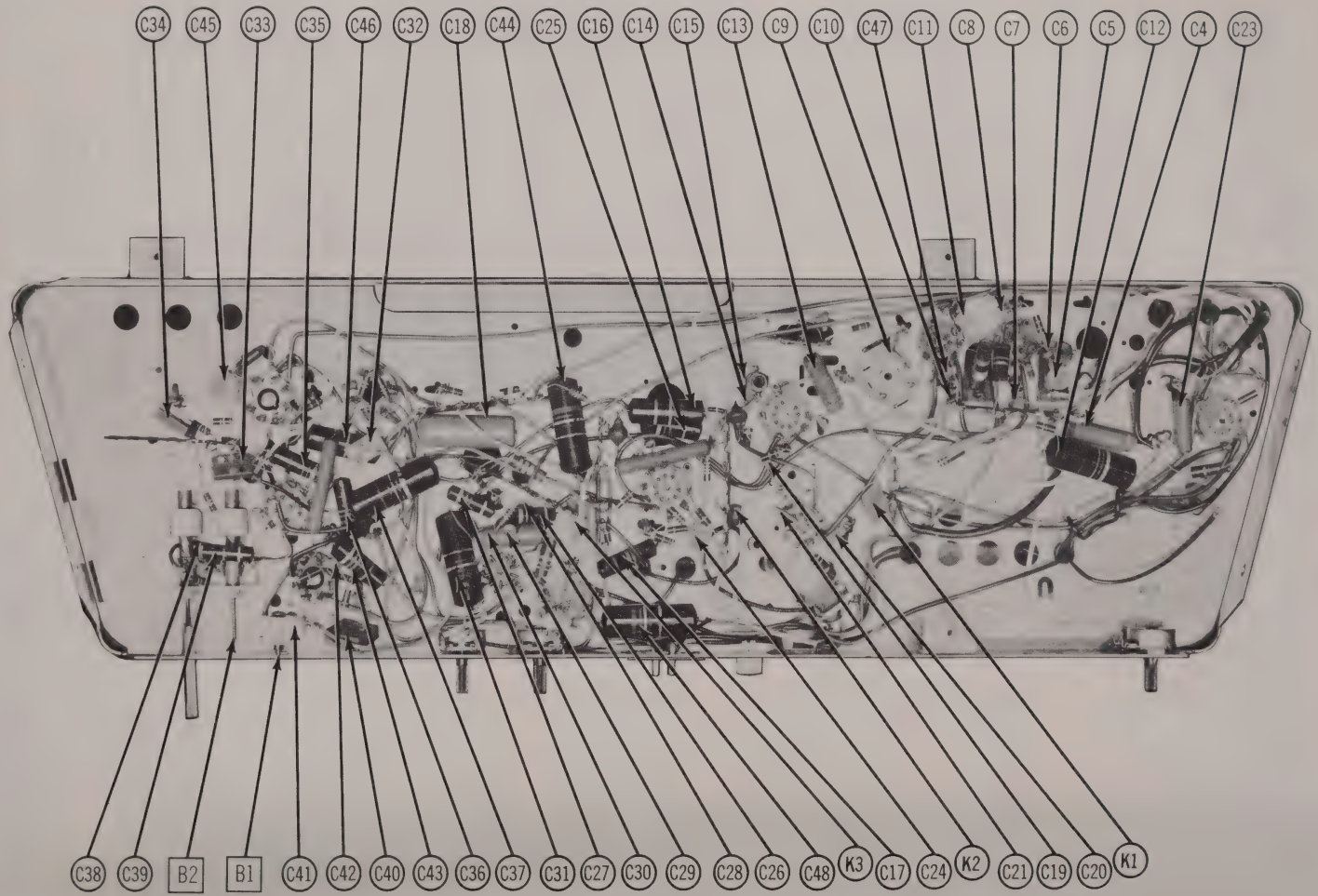
NAME	PART NO.	DESCRIPTION
Safety Glass	17X203-1	Tinted
Mask	43X426-3	
Knob	10A1000-1	Channel Selector
Knob	10A1001-1	Fine Tuning
Knob	10A932-1	Volume
Knob	10A903-1	Brightness, Vertical Hold
Knob	10A933-1	Contrast
Leg	81X33-4	Cabinet, Mahogany
Leg	81X32-5	Cabinet, Oak
Leg	81X33-14	Cabinet, Fruitwood

WIRING DATA

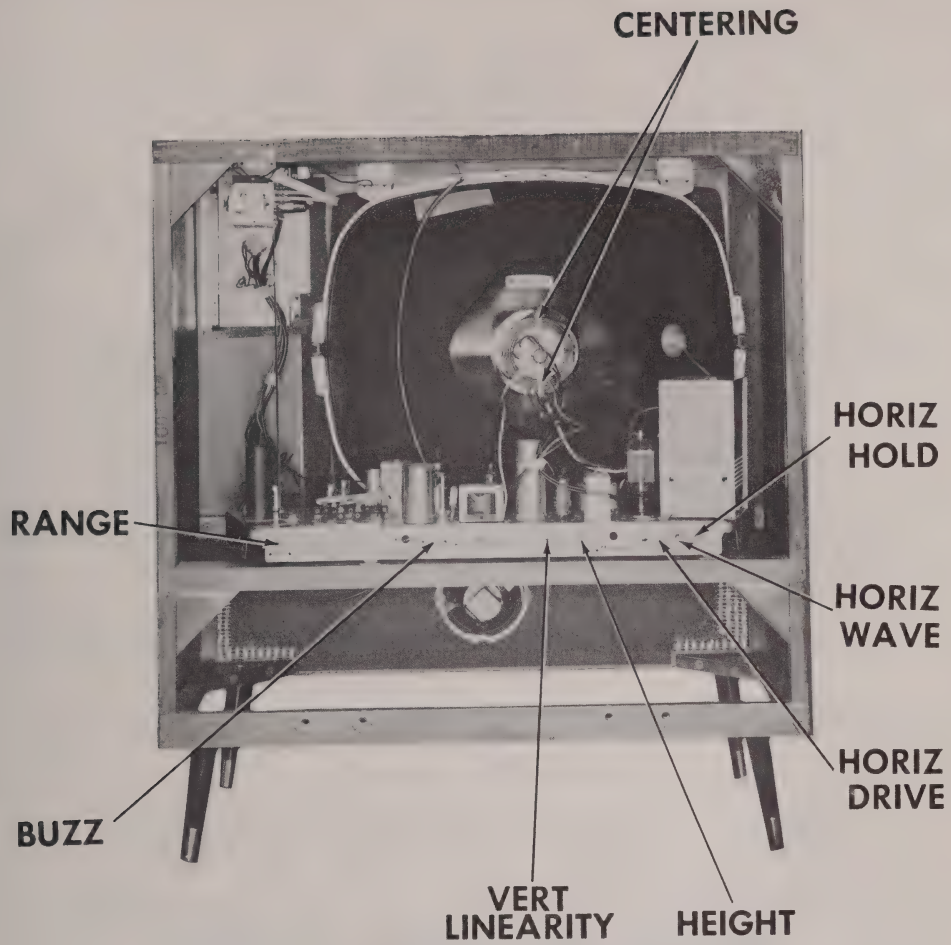
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8578
Antenna Rotor Cable	Use BELDEN No. 9464 (Flat) or 9494 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TRUETONE MODELS 2DC7130A, 2DC7132A, 2DC7134A

FOLDER 2



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast control fully counterclockwise and the Brightness control clockwise so that the picture appears washed out. Turn the Horzontal Drive trimmer (B1) clockwise until white bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of the scope to point Ⓒ. Low side to chassis. Adjust the Horizontal Waveform slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. See Fig. 4. Keep the picture in sync during this adjustment.

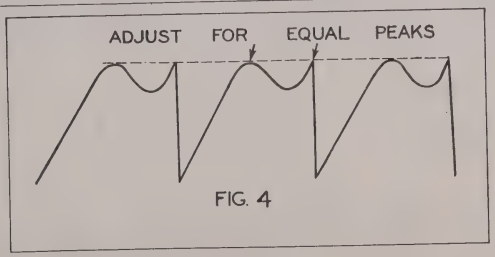
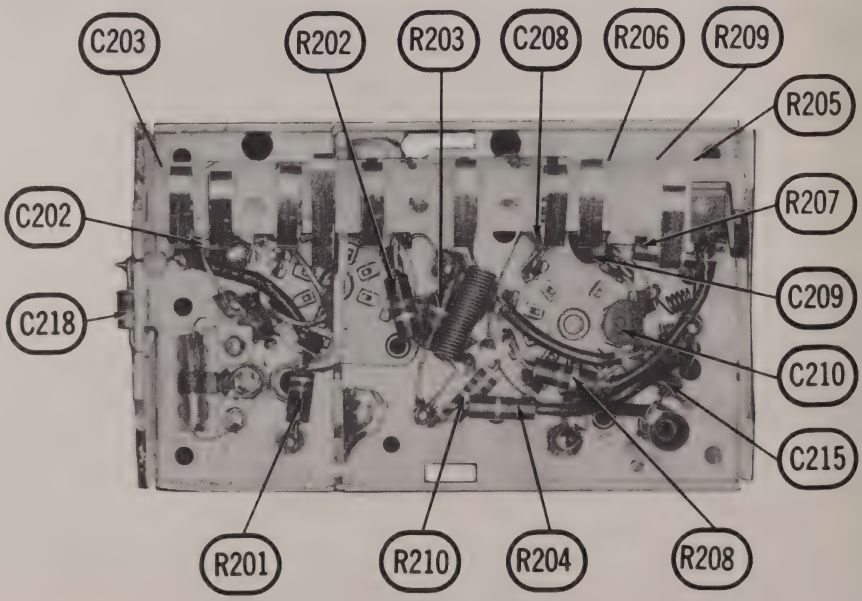
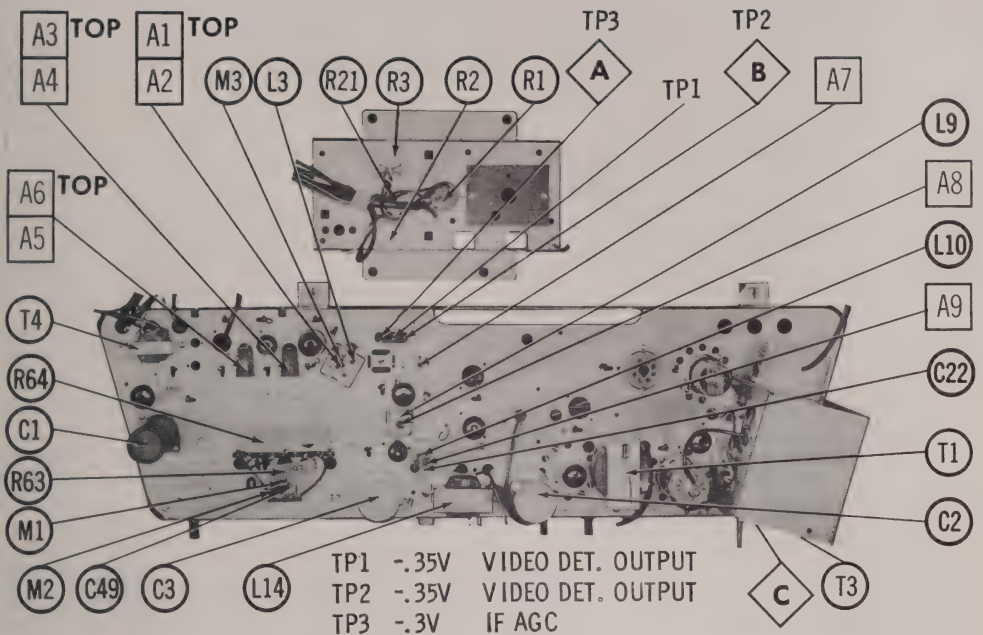


FIG. 4

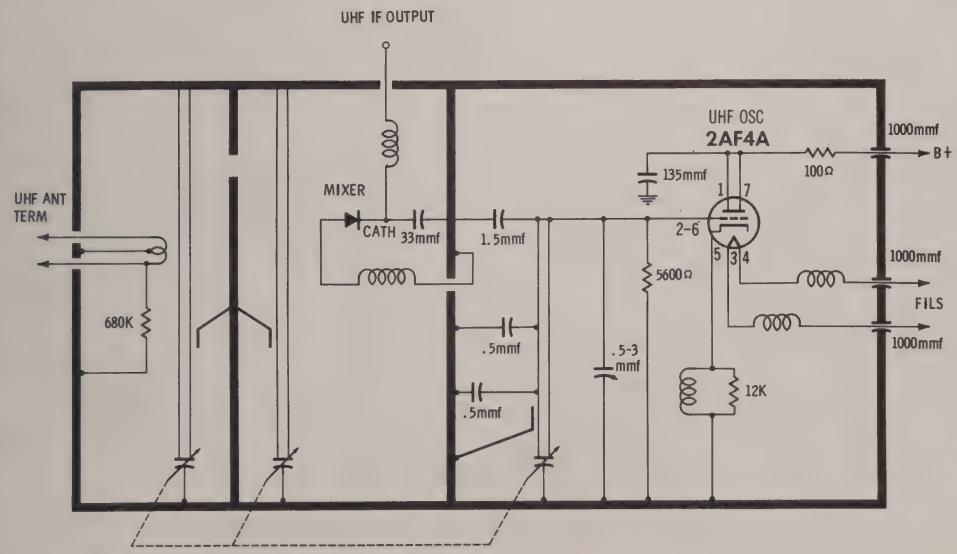
VHF TUNER with UHF Provisions 25A1192 - TOP VIEW



VHF TUNER with UHF Provisions 25A1192 - BOTTOM VIEW



CHASSIS - TOP VIEW



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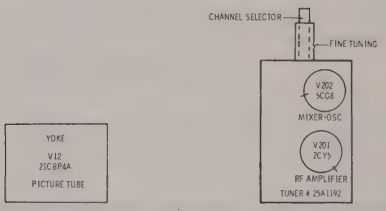
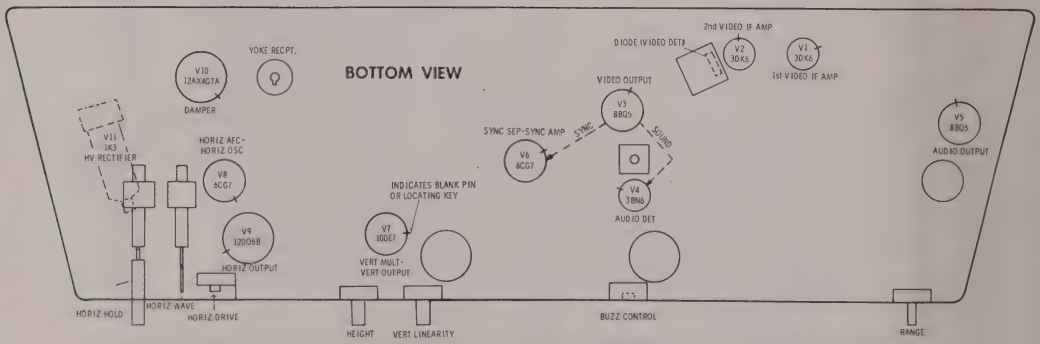
UHF TUNER 25A1193-1

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	● 800K	56Ω	60Ω	55Ω	† 10K	† 10K	0Ω		
V2	3DK6	0Ω	150Ω	55Ω	50Ω	† 3000Ω	† 3000Ω	0Ω		
V3	8BQ5	NC	1meg	● 90Ω	90Ω	80Ω	NC	† 3600Ω	NC	† 2500Ω
V4	3BN6	● 150Ω	6Ω	45Ω	50Ω	† 7200Ω	6Ω	† 330K		
V5	8BU5	100Ω	NC	150Ω	100Ω	90Ω	NC	† 930Ω	NC	† 520Ω
V6	6CG7	† 1.5meg	2.2meg	0Ω	75Ω	80Ω	† 13K	47K	0Ω	0Ω
V7	10DE7	† 405Ω	NC	1.5meg	60Ω	75Ω	● † 3meg	● 200K	0Ω	● 2200Ω
V8	6CG7	† 56K	340K	0Ω	25Ω	20Ω	† 52Ω	1.4meg	350K	0Ω
V9	12DQ6B	TP	32Ω	TP	† 95K	1meg	NC	45Ω	0Ω	TOP CAP † 8Ω
V10	12AX4GTA	TP	NC	¶	NC	† 52Ω	TP	7Ω	20Ω	
V11	1K3		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP † 400Ω
V12	21CBP4A	32Ω	● 32K	Pin 6 † 100K	Pin 10 † 10meg	Pin 11 ● 320K	Pin 12 25Ω			
V201	2CY5	● 10K	0Ω	5Ω	7Ω	† 2500Ω	† 12K	0Ω		
V202	5CG8	15K	† 12K	0Ω	5Ω	0Ω	† 5000Ω	† 50K	0Ω	242K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION
TP TIE POINT



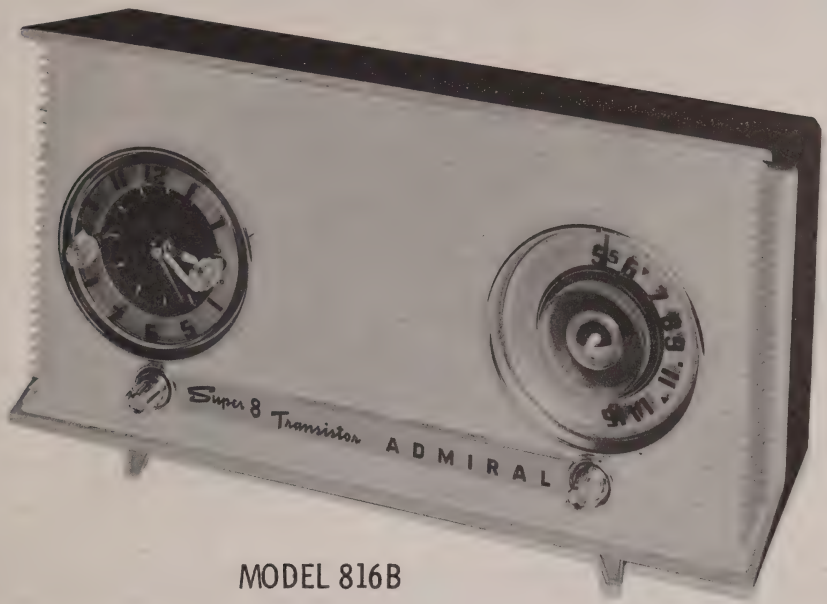


TUBE PLACEMENT CHART

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODELS
811B, 816B (Ch. 851C)

ADMIRAL MODELS
811B, 816B (Ch. 851C)



MODEL 816B

ADMIRAL MODELS
811B, 816B (Ch. 851C)

TRADE NAME	Admiral Models 811B, 816B (Ch. 851C)
MANUFACTURER	Admiral Corp., 3800 W. Cortland Street, Chicago 47, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver With Clock
POWER SUPPLY	9 Volts DC (Radio) 1.5 Volts DC (Clock) RATING 10MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1620KC 15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2.... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A3, A4.... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 and 3.

DISASSEMBLY

1. Remove 2 screws from cabinet bottom near front edge.
2. Remove 2 screws from cabinet back (upper section).
3. Separate cabinet rear from front.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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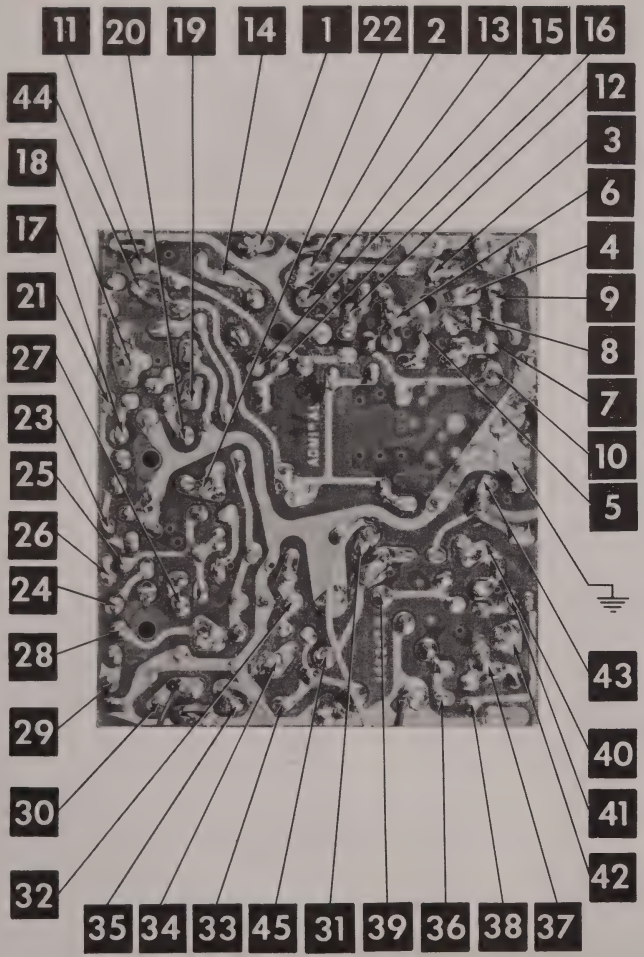
JG937

SET 499 FOLDER 3



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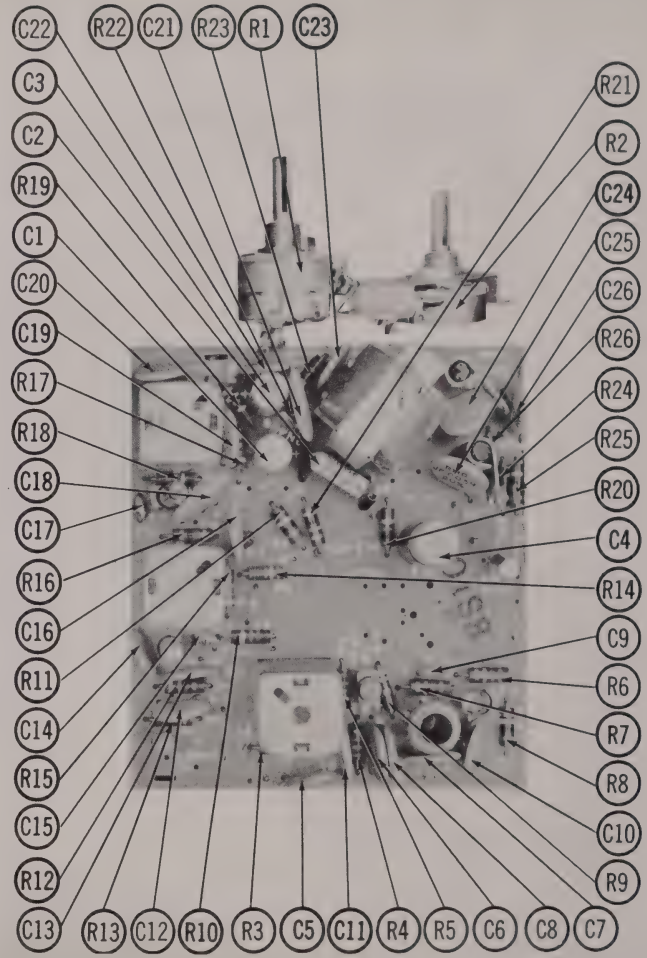
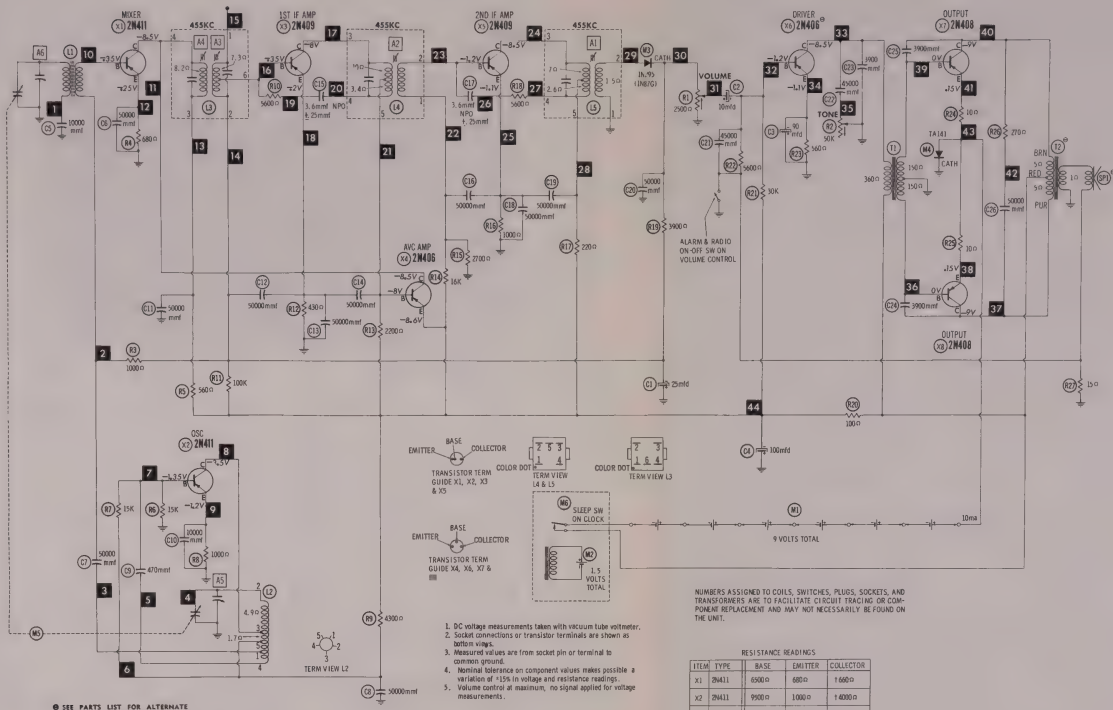
PRINTED BOARD



PRINTED BOARD - CAPACITOR & RESISTOR IDENT.



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N411	6500Ω	680Ω	†660Ω
X2	2N411	9900Ω	1000Ω	†4000Ω
X3	2N409	5000Ω	430Ω	
X4				
X5	2N409	2700Ω	1000Ω	†320Ω
X6				
X7				
X8				

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF R28 AND RED LEAD OF OUTPUT TRANSFORMER T2.
RESISTANCE MEASUREMENTS ON X4, X6, X7 AND X8 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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ADMIRAL MODELS 811B, 816B (Ch. 851C)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Mixer		2N411	2N486	2N411	PNP
X2	2N411	Oscillator		2N411	2N485	2N411	PNP
X3	2N409	1st IF Amplifier		2N409	2N483	2N409	PNP
X4	2N406	AVC Amplifier		2N406	2N362	2N406	PNP
X5	2N409	2nd IF Amplifier		2N409	2N483	2N409	PNP
X6	2N406 *	Driver		2N406	2N362	2N406	PNP
X7	2N408	Output		2N408	2N632	2N408	PNP) Matched
X8	2N408	Output		2N408	2N632	2N408	PNP) Pair

* Early versions use type 2N408.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	3	67B32-13	BCD3025	ECPB11	PET130		VL-1041	
C2	10	3	67B35-6	PTT3010	NLW10-6	TT3X10	ML10-6	TE-1053	
C3	90	3	67B32-10	BCD3100	ECPB17	TT6X100		VL-1051	
C4	100	12	67B32-6	BCD12100	NLW100-12	PET1500		VL-1137	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C7	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C8	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C9	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C11	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C12	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C13	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C14	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C15	3.6 NPO ± .25mmf	#65D 6-190						10TCC-V39
C16	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C17	3.6 NPO ± .25mmf	#65D 6-190						10TCC-V39
C18	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C19	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C20	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C21	45000	#65B 45-11						
C22	45000	#65B 45-11						

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C24	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C25	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C26	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50

\# Admiral Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2500Ω	½	75D1-126			B13-111		Volume
B	Shaft					SK9		
C	Switch					76-1		Radio-Alarm
R2A	50K	½	75D1-123		A47-50K-Z	B13-123	U33	Tone
B	Shaft				RS-3/16	SK9	DS-37	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1000Ω	
R4	680Ω	
R5	560Ω	
R6	15K	
R7	15K	
R8	1000Ω	
R9	4300Ω	
R10	5600Ω	
R11	100K	

ITEM No.	RATING	REMARKS
R12	430Ω	
R13	2200Ω	
R14	16K	
R15	2700Ω	
R16	1000Ω	
R17	220Ω	
R18	5600Ω	
R19	3900Ω	
R20	100Ω	

ITEM No.	RATING	REMARKS
R21	30K	
R22	5600Ω	
R23	560Ω	
R24	10Ω	
R25	10Ω	
R26	270Ω	
R27	15Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	69B225-4			BC-419			
L2	Osc. Coil	69B222-2						
L3	1st IF Trans.	72C189-1						
L4	2nd IF Trans.	72C190-1						
L5	3rd IF Trans.	72C190-2						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B76-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T2	400Ω	4-8Ω	(Part of SP1)							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78C156-4 *	4A07 ♦	* Includes T2 ♦ Fabricate New Mounting Bracket

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		*130		*635		*M-14R	* 6 Required (Radio)
M2	1.5V			130		635		M-14R	(Clock)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N295 *		1N636	1N295	1N295	Detector (Pigtail)
M4	TA141			CK879		Bias Regulator

* Alternate Type 1N87G.

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuning Cap.	68B66-10	2 Gang
	Printed Board	14E247-5	
M5	Clock		

CABINETS & CABINET PARTS

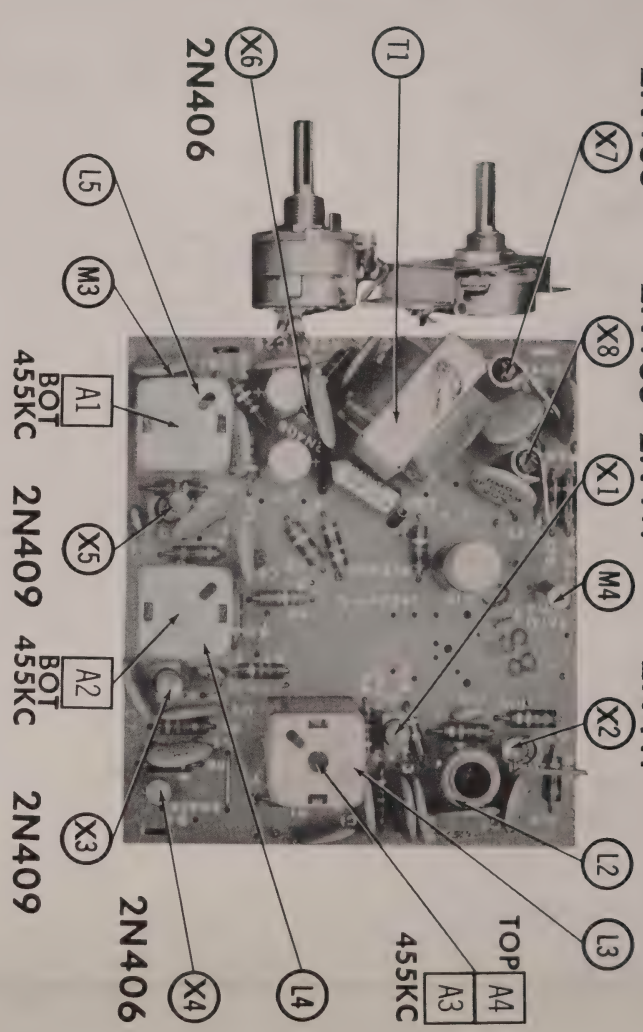
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33D296-2	Tuning
Knob	33C230-7	Volume, Tone
Knob	91C23-10	Clock
Dial	33D296-1	Tuning
Cabinet Front	34D136-1	
Cabinet Rear	34E138-3	Model 811 (Black)
Cabinet Rear	34E138-4	Model 816 (Gold)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

AUTOMATIC MODEL WP-167

AUTOMATIC
MODEL WP-167

AUTOMATIC
MODEL WP-167

TRADE NAME	Automatic Model WP-167
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 6 Tube Universal Type Automobile AM Receiver
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	538 — 1610KC RATING 5.6 Amp. @6.3 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A7.... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Antenna receptacle thru dummy (Fig. 1).	"	"	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENTS

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

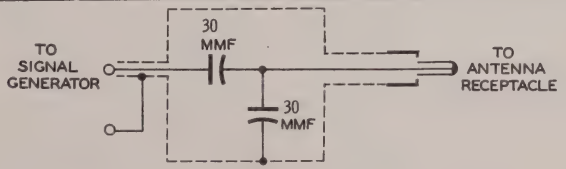


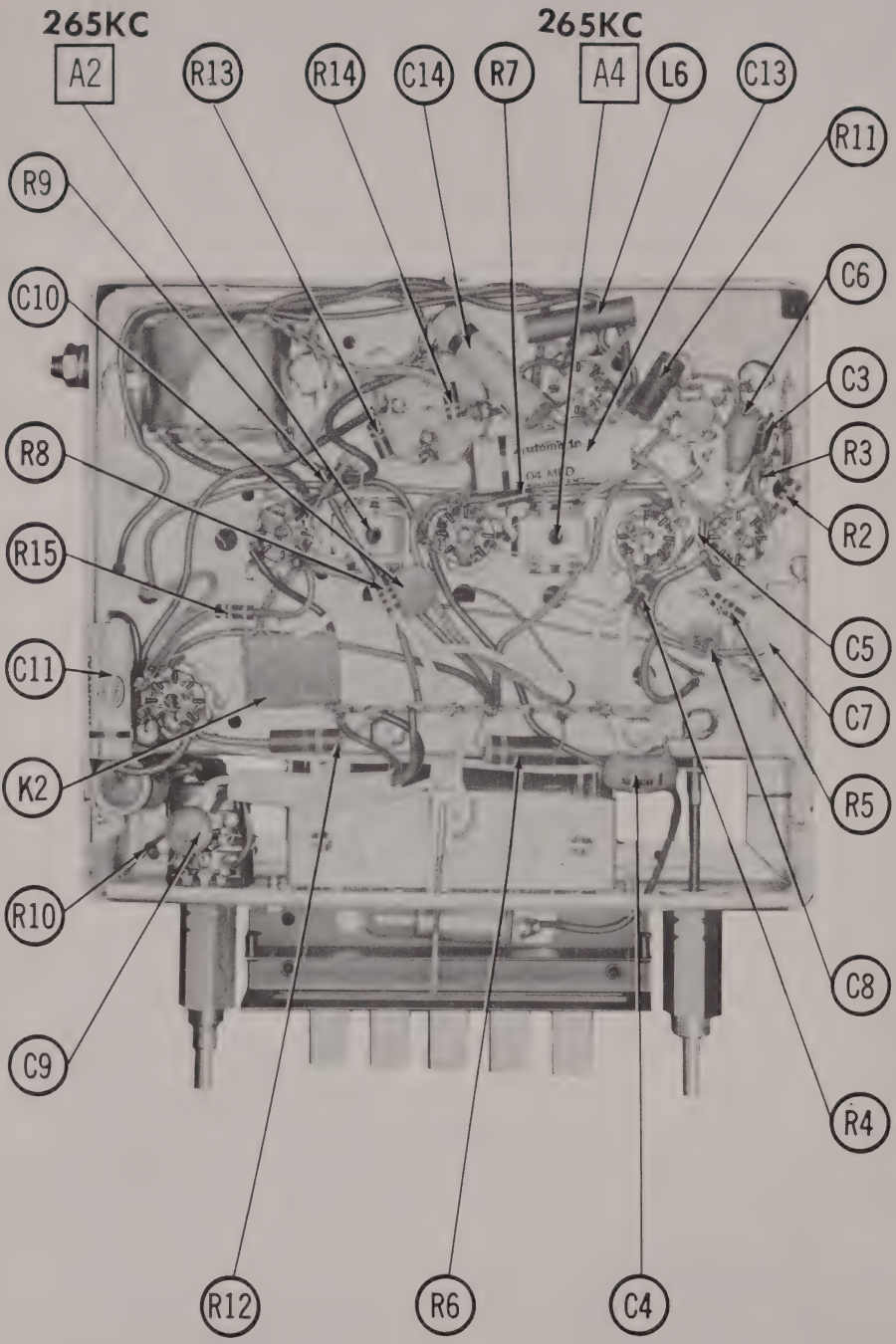
FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

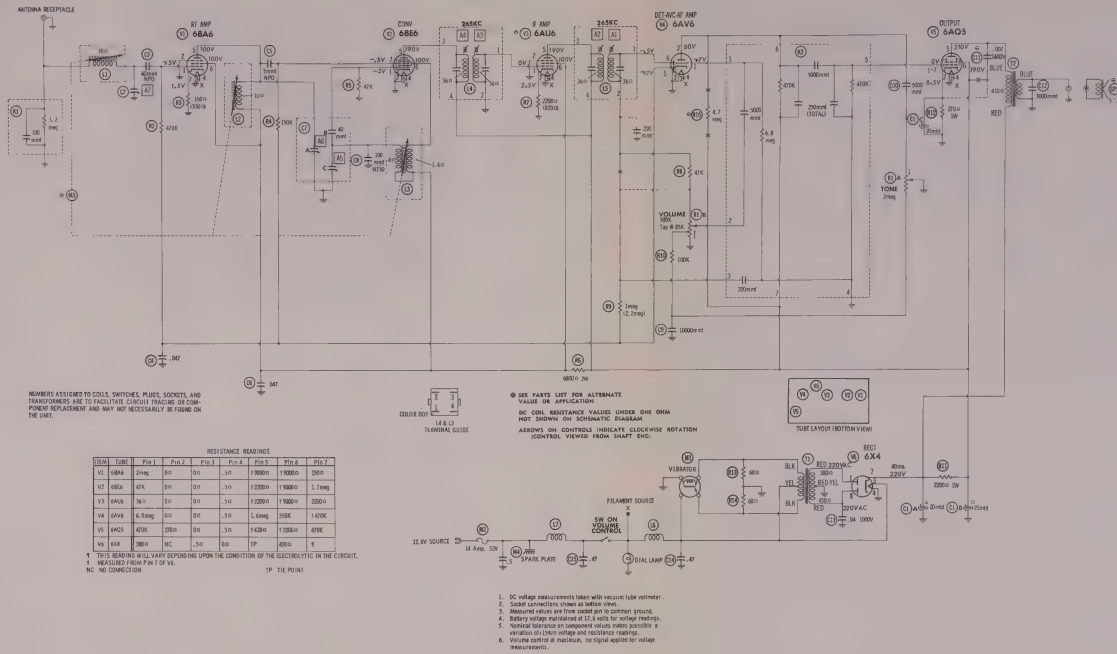
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD853

SET 499 FOLDER 4



CHASSIS BOTTOM VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BA6	2meg	0Ω	0Ω	.1Ω	↑900ΩΩ	↑900ΩΩ	150Ω
V2	6BE6	47K	0Ω	0Ω	.1Ω	↑220ΩΩ	↑900ΩΩ	1.7meg
V3	6AU6	3KΩ	0Ω	0Ω	.1Ω	↑220ΩΩ	↑900ΩΩ	220ΩΩ
V4	6AV6	6.8meg	0Ω	0Ω	.1Ω	1.6meg	150K	1470K
V5	6AQ5	470K	270Ω	0Ω	.1Ω	↑43ΩΩ	↑220ΩΩ	470K
V6	6X4	380Ω	NC	.1Ω	0Ω	TP	430Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 7 OF V6.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom view.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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AUTOMATIC
MODEL WP-167

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	6BA6
V2	Converter	6BE6
V3	IF Amplifier	6AU6 (6BA6) *

ITEM No.	USE	TYPE
V4	Det.-AVC-AF Amp.	6AV6
V5	Output	6AQ5
V6	Rectifier	6X4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	350	20-86-S	AFH3-107	C0800	FP329.5	TMT-92	TVL-3635	
B	■20	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2								
C3	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C6	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7A								
B	40	#28-4046	NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C								
C8	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	.007 1600V	Note 1	P1684CM-007		CUB16D7	16DP-3-702	GEM-1627	MB-D7
C12	3000		BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C13	.04 1000V		P1088N-04		CUB10S4	16DP-5-403	GEM-1014	MB-S4
C14	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C15	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

Automatic Part Number.
Note 1. Some versions may use 500mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg		80A1190	F1-67	RTV-696C*			
B	500K			R2-45				Tone Volume
	85K Tap						■ UE4100-S	
C	Shaft			AK-26				
D	Switch			KR-4				Power Off-On

■ "STA-LOC" equivalent: FE26L, RU55T15, OS1687, IS2125, US41.
* Use Bushing XB-2.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	470K	
R3	150Ω	(330Ω)*
R4	150K	
R5	47K	
R6	6800Ω 2W	

ITEM No.	RATING	REMARKS
R7	2200Ω	(820Ω) *
R8	47K	
R9	1meg	(2.2meg) *
R10	100K	
R11	2200Ω 2W	

ITEM No.	RATING	REMARKS
R12	270Ω 1W	
R13	68Ω	
R14	68Ω	
R15	4.7meg	Note 1

* Alternate value.
Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil							
L2	RF Coil							
L3	Osc. Coil							
L4	1st IF Trans.	14-265	16-6752	16-6752	BC-350	12-H1	RF-3	
L5	2nd IF Trans.	14-265	16-6752	16-6752	BC-350	12-H1	RF-3	
L6	Hash Choke	14-205						10uh
L7	"A" Lead Hash Choke	14-205						10uh

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	6.3V@ 3.2A	440VCT @ .040A		76A1204-6	22R63				22R63	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5800Ω	3-4Ω	75A1203	24S51	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5"x 7" 4"x 8"	PM PM	3-4Ω 3-4Ω	73-655 73B170 *	69A3	* Alternate

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA	
K1 K2	Antenna Filter Audio Coupling	100mmf, 1.2meg 220mmf, 250mmf, (2) 5000mmf, 470K, 470K, 6.8meg	89-4204 89-151	Sprague Aerovox Centralab Cornell-Dubilier Mallory Sprague	PCR-9 PA-113-2 PC-151 116TM2 MS-107 DT-2

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interruptor	6V	115∿	113-83	5715	1501	5715	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A 32V			307014 (SFE 14A 32V)	155014	SFE 14	HHH

MISCELLANEOUS

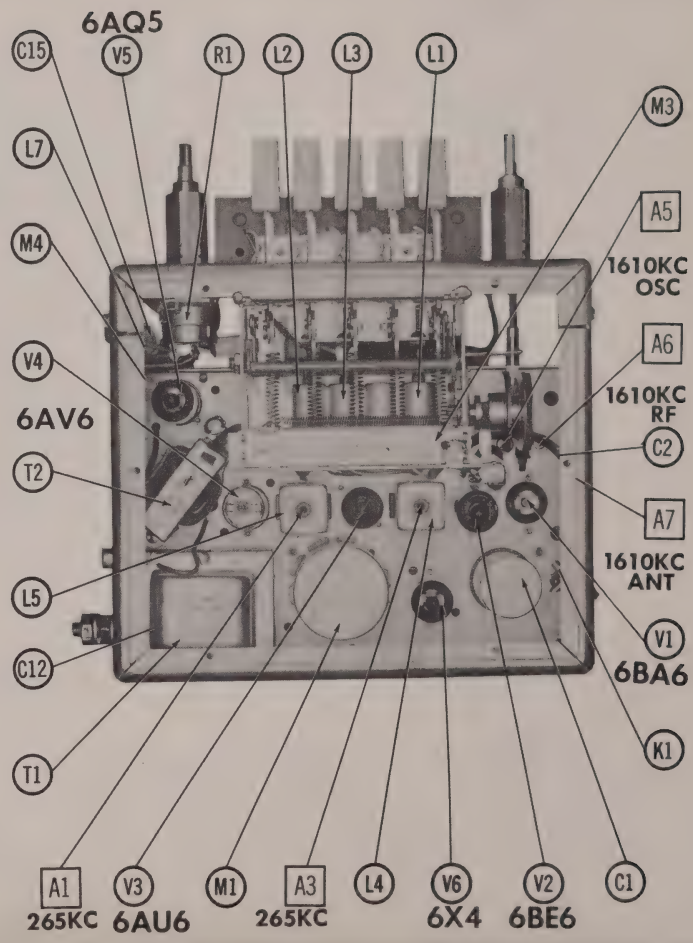
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Tuner	78B1191	Pushbutton
M4	Tuner Spark Plate	78A1205	Manual

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

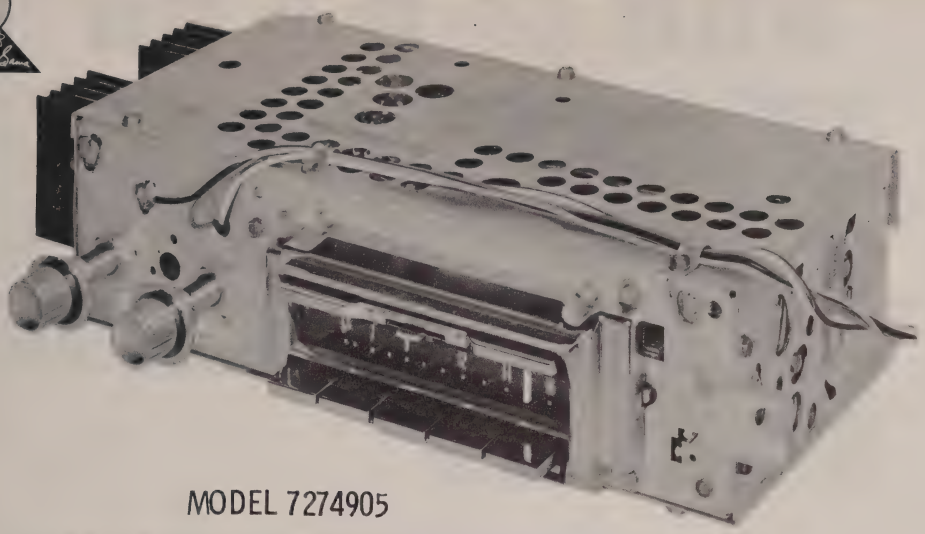
NAME	PART NO.	DESCRIPTION
Knob	47B319-2W	Tuning, Volume
Knob	47B393	Tone
Knob	47B393-1	Dummy

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

CADILLAC MODELS 7274905, 7274925



MODEL 7274905

TRADE NAME	Cadillac Model 7274905 (For 1960 Cadillac Automobiles) 7274925 (For 1960 Cadillac 75 Series Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube, 1 Transistor Custom Built Automobile AM Receiver (Model 7274925 is Remote Control Receiver)
POWER SUPPLY	12 Volt Storage Battery
RATING	2.6 Amp. @ 12.6 Volts DC (13 Amp. When Tuning)
TUNING RANGE	BROADCAST 535 - 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #9440
A5, A9, A10 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High frequency end stop	DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	A4	Adjust for MINIMUM deflection.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High frequency end stop	DC probe to point (A). Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
4.	"	600KC	600KC signal	"	A9, A10	"
5.	"	1615KC	1615KC signal	"	A7, A8	"
6.	"	900KC	900KC signal	"		Adjust pointer adjustment until pointer coincides with 900 on dial.
7.	With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC; Adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

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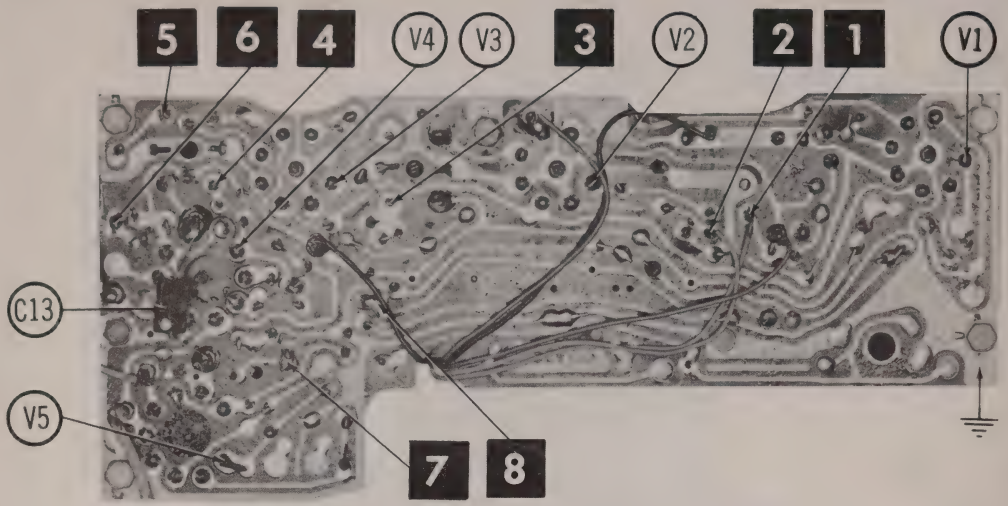
KD107

CADILLAC MODELS 7274905, 7274925
CADILLAC MODELS 7274905, 7274925
SET 499 FOLDER 5



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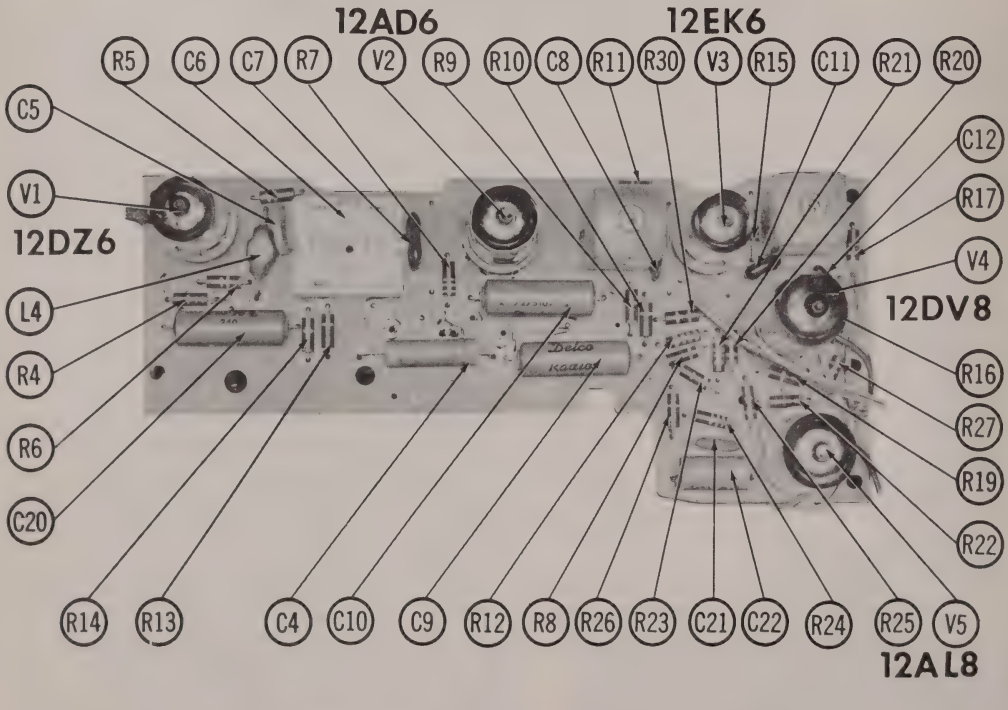
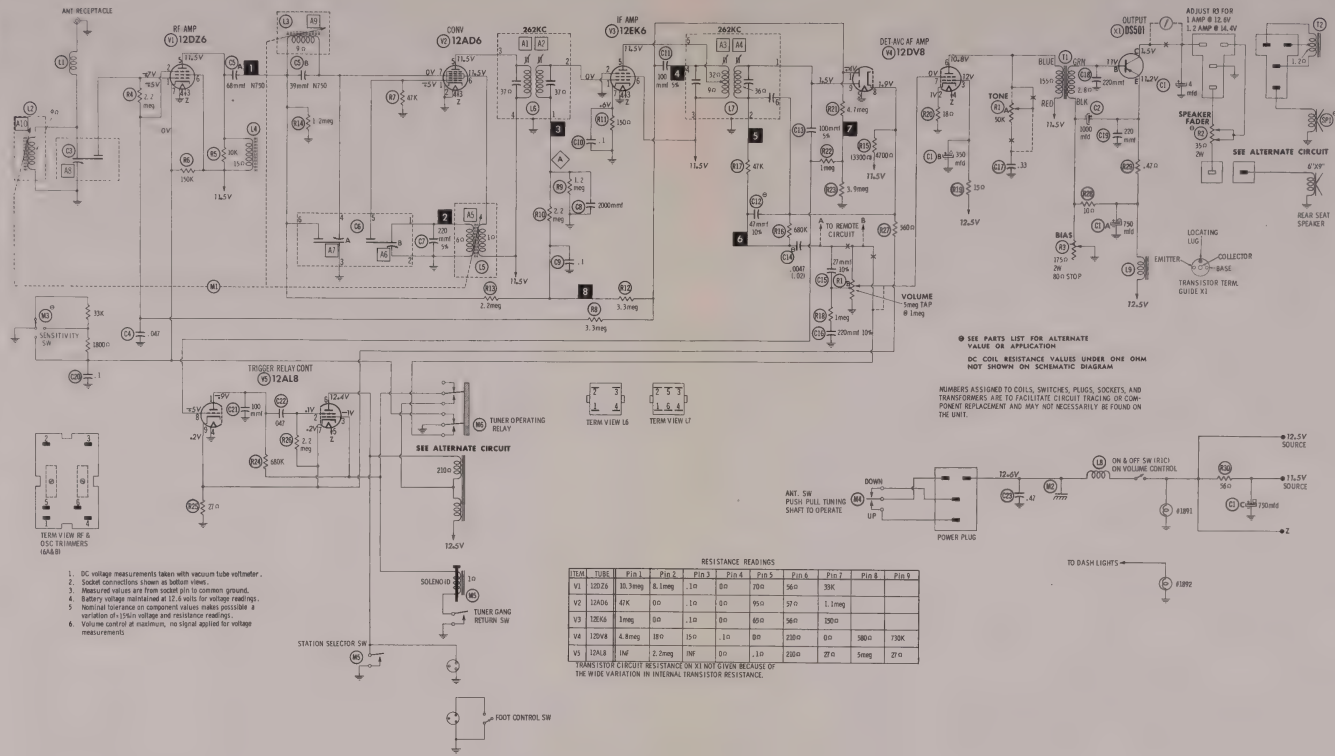
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD - COMPONENT IDENT.



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10.3meg	8.1meg	.1Ω	0Ω	70Ω	56Ω	33K		
V2	12AD6	47K	0Ω	.1Ω	0Ω	95Ω	57Ω	1.1meg		
V3	12EK6	1meg	0Ω	.1Ω	0Ω	65Ω	56Ω	350Ω		
V4	12DV8	4.8meg	18Ω	15Ω	.1Ω	0Ω	230Ω	0Ω	580Ω	730K
V5	12AL8	INF	2.2meg	INF	0Ω	.1Ω	210Ω	27Ω	5meg	27Ω

TRANSISTOR CIRCUIT RESISTANCE ON X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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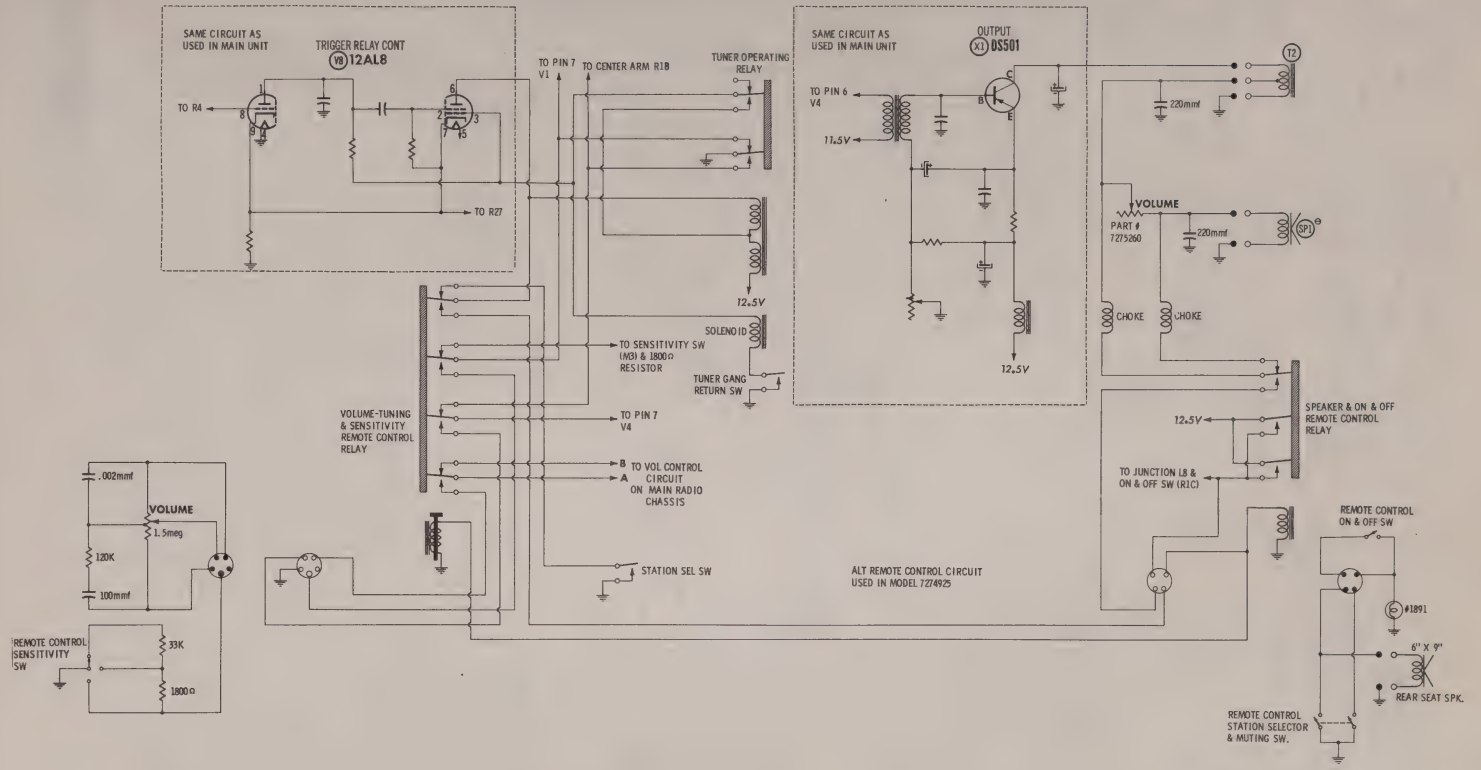
CADILLAC MODELS 7274905, 7274925



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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CADILLAC MODELS 7274905, 7274925

CADILLAC MODEL 7274905 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	RF Amplifier	12DZ6
V2	Converter	12AD6
V3	IF Amplifier	12EK6
V4	Det. - AVC - AF Amp.	12DV8
V5	Trigger Relay Control	12AL8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	DS-501	Output	2N235A			2N677 *	PNP

* Requires new mounting holes.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲750	16	7273847	AFH4-20-77		WP401.8		TVLS-4025 *	
B	▲350	16							
C	■750	16							
D	4	11.5							
C2	1000	1	7271557	PRS1130	BR1000-6	TC-110	TD-1000-6	TVA-1104	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3			#7275240						
C4	.047	75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C5A	68	N750		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39	N750			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C6A			#7273693						
B									
C7	220	5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C8	2000			BPD-002	DD-202	BYA1D2	CCD-202	B-220	5HK-D20
C9	.1	75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C10	.1	75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	100	5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C12	47	10%	Note 1	1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C13	100	5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C14	.0047	200V	(.02) †	P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C15	27	10%		1469-000027	TCZ-27	22R5Q27	CM-19B-270K	CNO-427	MS-427
C16	220	10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	CNO-322	MS-322
C17	.33	100V		P288N-33		CUB2P33	2DP-5-334	GEM-2033	2TM-P33
C18	220			DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C19	220			DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C20	.1	75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C21	100			BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C22	.047	100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C23	.47	100V		P288N-47	"	CUB2P47	2DP-5-474	GEM-2047	2TM-P47

Delco Part Number.
† Alternate Value used in Model 7274925. Note 1. Not used in Model 7274925.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50K		7275243					Tone
B	5meg					† QJ-1272		Volume
	1meg Tap							
C	Switch							Power Off-On
R2	35Ω	2(WW)	7275244					Speaker Fader Note 1
R3	175Ω	2(WW)	7276052		39-100 *	110-100 *	FL-100 *	Bias
	80Ω Stop							

† "Concentrikit" Equivalent: K-8 Kit with Base Elements and Shafts: B13-123, P14-102 (Panel)
B13-141X, R1-126 (Rear)
76-1 (Switch)
S6 (Bushing)

* Use 82Ω series resistor.

Note 1. Model 7274925 uses speaker control (Part #7275260).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	2.2meg	
R5	10K	
R6	150K	
R7	47K	
R8	3.3meg	
R9	1.2meg	
R10	2.2meg	
R11	150Ω	
R12	3.3meg	

* Alternate Value.

ITEM No.	RATING	REMARKS
R13	2.2meg	
R14	1.2meg	
R15	4700Ω	(3300Ω) *
R16	680K	
R17	47K	
R18	1meg	
R19	15Ω	
R20	18Ω	
R21	4.7meg	

Delco Part Number (Fuse Type).

ITEM No.	RATING	REMARKS
R22	1meg	
R23	3.9meg	
R24	680K	
R25	27Ω	
R26	2.2meg	
R27	560Ω	
R28	10Ω	
R29	.47Ω	#7270608
R30	56Ω	

COILS (RF-IF)

ITEM No.	USE	DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	RF Choke	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Choke	7269684						1.8uh
L5	Osc. Coil	1221151						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	1221253						
L8	"A" Lead Hash Choke	1217846						

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	1.1A	.7Ω	.011 Hy.	7274342				TC-2		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.4	1	1221425			TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap @ 3-4Ω	7274608				TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4" x 10"	PM	3-4Ω	7273025	46A15	* Alternate Part
	4" x 10"	PM	3-4Ω	6109 *	46A15	‡ Rear Seat Speaker
	6" x 9"	PM		7262245 ‡		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Complete, (Series F3 Tuner)
M2	Spark Plate	7276044	
M3	Switch	7275249	Sensitivity, (Includes Station Selector Bar & Resistors)
	Switch	7275262	Sensitivity (Model 7274925)
M4	Switch	7271223	Antenna
	Switch	1221408	Push Bar and Solenoid (Part of M6)
M5	Solenoid	1221409	Solenoid & Plunger Assembly
M6	Relay	7270545	Tuner Operation

CABINETS & CABINET PARTS

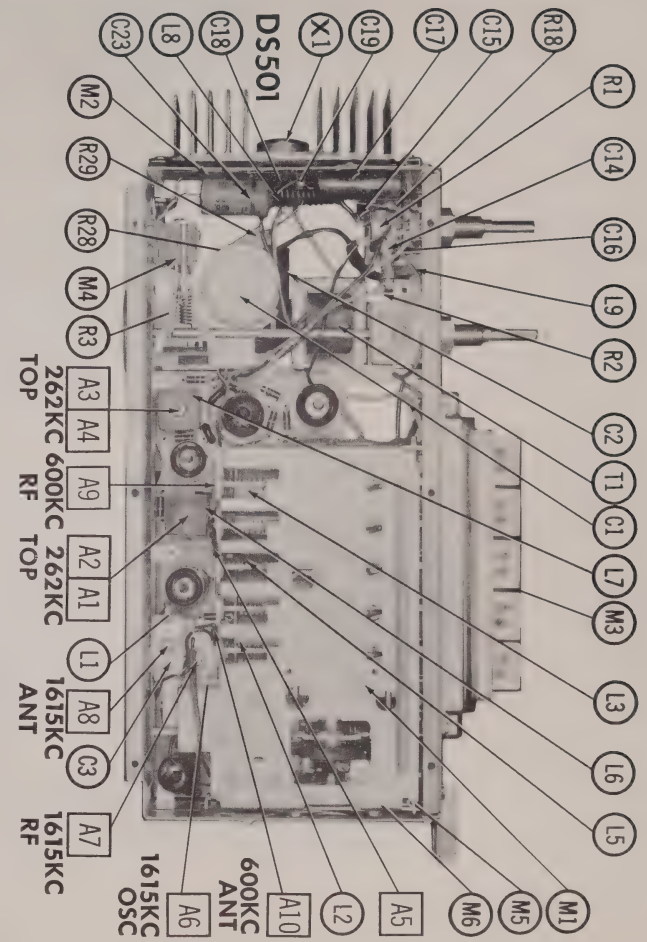
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1471160	Tuning, Volume
Knob	1471161	Tone, Speaker
Pushbutton Ass'y	1220974	Includes Front Bearing Plate, Slides, & Pushbuttons
Pushbutton "1"	7269269	
Pushbutton "2"	7269270	
Pushbutton "3"	7269271	
Pushbutton "4"	7269272	
Pushbutton "5"	7269273	
Treadle Bar	7270014	
Pointer	7272066	
Calibrated Dial	7273003	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—TOP VIEW



PHOTOFACT® Folder

COLUMBIA MODELS C1152B, M, W, C1154B, M, W, C1156C, M, C1160B, M, W

COLUMBIA MODELS C1152B, M, W, C1154B, M, W, C1156C, M, C1160B, M, W

MODEL C1152M

COLUMBIA MODELS C1152B, M, W, C1154B, M, W, C1156C, M, C1160B, M, W

TRADE NAME	Columbia Models C1152B, C1152M, C1152W, C1154B, C1154M, C1154W, C1156C, C1156M, C1160B, C1160M, C1160W
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 73 Watts, .69 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR COLLARO CONQUEST (REVISED) — PHOTOFACT SET 408 FOLDER 6 OR RECORD CHANGER MANUAL RC-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT928

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V2	Channel 1 Output	6BQ5
V3	Channel 2 Output	6BQ5
V4	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	1IF754	AFH4-79-10	D0663.2	FP430.6	TMQ-164	TVL-4739	
B	■30	450							
C	▲40	400							
D	40	25							
C2	20	25		XPP-25020	NLW20-25	TT25X20	ML20-25	TE-1206	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

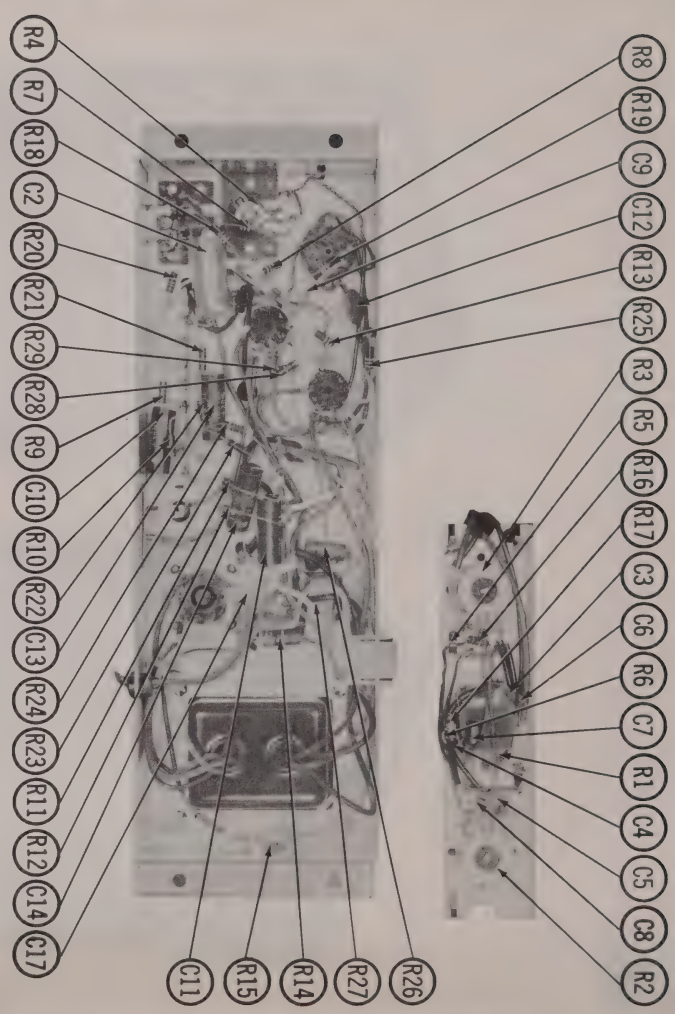
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C4	68 10%		1469-000068	TCZ-68	22R5068	CM-19B-680K	CNO-468	MS-468
C5	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C6	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C7	68 10%		1469-000068	TCZ-68	22R5Q68	CM-19B-680K	CNO-468	MS-468
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-322	5HK-D20
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C14	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C15	1mfd 100V		P288N-1.0		CUB2W1		GEM-21	2TM-M1
C16	1mfd 100V		P288N-1.0		CUB2W1		GEM-21	2TM-M1
C17A	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-2X110	BL-S10
B	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103		BL-S10
C18	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.3meg*		9F628	BT-180			FA36DT155	Loudness, Channel 1
B	3.3meg*			STR-180			RU36DT155	Loudness, Channel 2
C	Shaft			Not Req.			CS3500	
R2A	3meg		9F626	B-85			FA36A	Bass, Channel 1
B	3meg			SR-85			RU36A	Bass, Channel 2
C	Shaft			Not Req.			CS3500	
R3A	1meg		9F627	B-69	AD47-1megS		FA16L	Treble, Channel 1
B	1meg			SR-69	Not Req.		RU16L	Treble, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R4A	700Ω		9F629	AB-5	B47-750-S	B11-105	PTA751L	Balance
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

* Taps @ 350K & 1.7meg.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	220K	
R6	100K	
R7	47K	
R8	470K	
R9	2200Ω	
R10	15K	
R11	100Ω	
R12	1500Ω	
R13	470K	

ITEM No.	RATING	REMARKS
R14	82Ω 2W	
R15	22Ω	
R16	220K	
R17	100K	
R18	47K	
R19	470K	
R20	1200Ω	
R21	2200Ω	
R22	15K	

ITEM No.	RATING	REMARKS
R23	100Ω	
R24	1500Ω	
R25	470K	
R26	1500Ω 2W	
R27	120Ω 2W	
R28	100Ω	
R29	100Ω	
R30	470K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	COLUMBIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .69A	580 VCT @ .100A	5V @ 2A	2F118						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.8A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	COLUMBIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω	3-4Ω	3F249	24S07	A-3019	AU-604	A-3849	24S07	S-53X	
T3	6200Ω	3-4Ω	3F249	24S07	A-3019	AU-604	A-3849	24S07	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	12"	PM	3-4Ω	1F151*	12A4A	* Models C1152, C1154
SP2	5"	PM	3-4Ω	1F147*†	5A15TZ3.8	† Models C1156, C1160
SP3	12"	PM	3-4Ω	1F151 *	12A4A	
SP4	5"	PM	3-4Ω	1F147*†	5A15TZ3.8	
	8"	PM		1F149 †		
	12"	PM		1F150 †		

PHONO CARTRIDGE

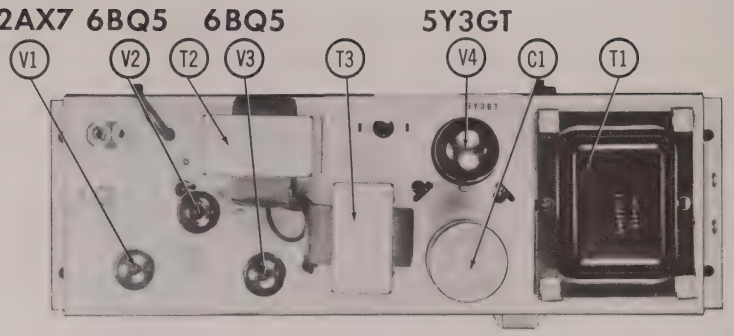
ITEM No.	REPLACEMENT DATA								
	COLUMBIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	CD-SC-1S	13TB		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	COLUMBIA PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2		W-110STS † or W-110STD ♦	CS-1X † or CS1XD ♦	† Jewel ♦ Diamond

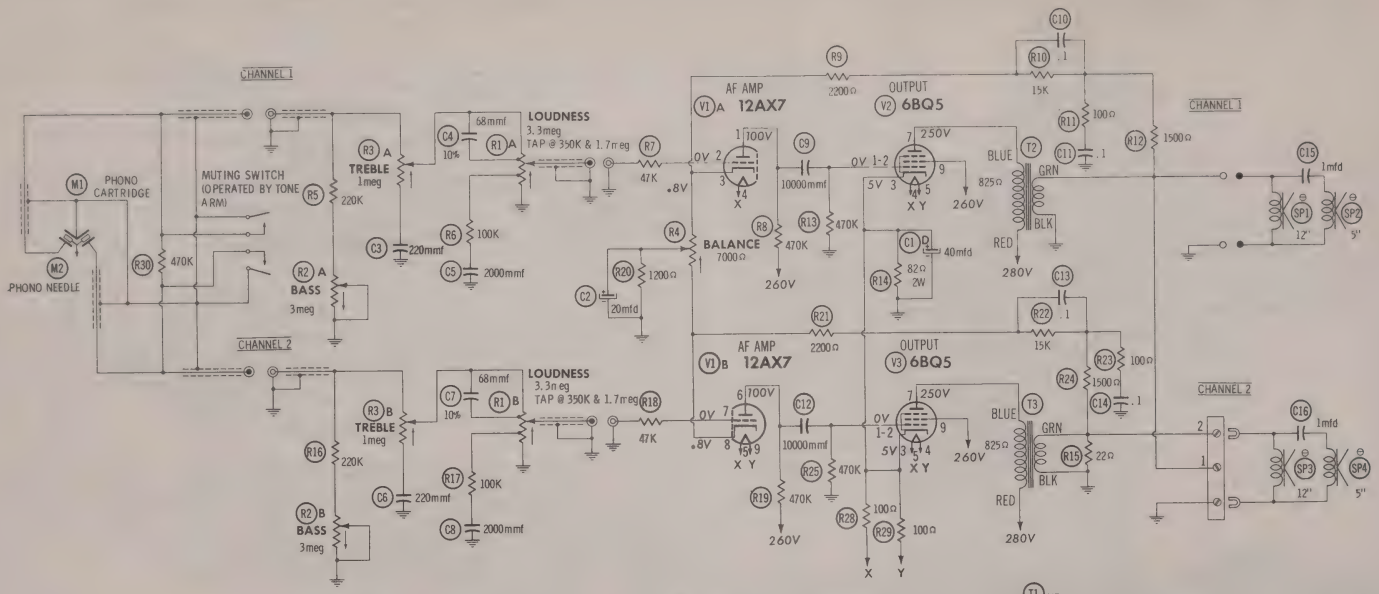
CHASSIS—TOP VIEW



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8F516	Loudness, Treble, Bass, Models C1152M, B, W, C1160B, M, W
Knob	8F515	Loudness, Treble, Bass, Models C1156C, M
Knob	8F517	Loudness, Treble, Bass, Models C1154B, M, W
Cabinet	17F862	Mahogany, Model C1152M
Cabinet	17F863	Walnut, Model C1152W
Cabinet	17F864	Blonde, Model C1152B
Cabinet	17F865	Speaker, Mahogany, Model C1152M
Cabinet	17F866	Speaker, Walnut, Model C1152W
Cabinet	17F867	Speaker, Blonde, Model C1152B
Cabinet	17F859	Mahogany, Model C1154M
Cabinet	17F860	Walnut, Model C1154W
Cabinet	17F861	Blonde, Model C1154B
Cabinet	17F856	Mahogany, Model C1156M
Cabinet	17F857	Walnut, Model C1156W
Cabinet	17F858	Cherry, Model C1156C
Cabinet	17F850	Mahogany, Model C1160M
Cabinet	17F851	Walnut, Model C1160W
Cabinet	17F852	Blonde, Model C1160B
Cabinet	17F853	Speaker, Mahogany, Model C1160M
Cabinet	17F854	Speaker, Walnut, Model C1160W
Cabinet	17F855	Speaker, Blonde, Model C1160B



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†470K	47K	1500Ω	135Ω	135Ω	†470K	47K	1500Ω	135Ω
V2	6BQ5	470K	470K	82Ω	135Ω	135Ω	NC	†945Ω	NC	†1600Ω
V3	6BQ5	470K	470K	82Ω	135Ω	135Ω	NC	†945Ω	NC	†1600Ω
V4	5Y3GT	NC	¶	NC	85Ω	NC	80Ω	NC	¶	

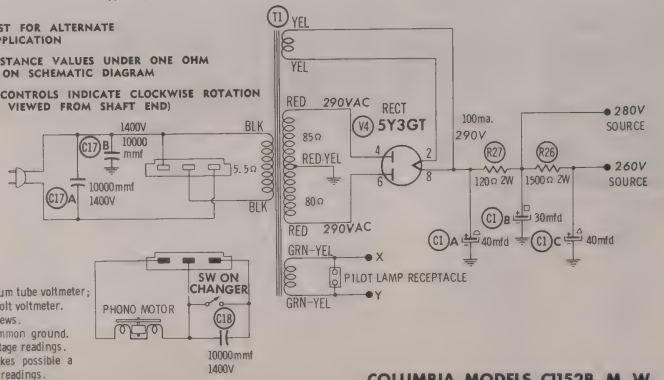
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION

TP TIE POINT

❻ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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COLUMBIA MODELS C1152B, M, W, C1154B, M, W, C1156C, M, C1160B, M, W

PHOTOFACT® Folder with CIRCUITRACE®

CROWN
MODEL TR-400

CROWN
MODEL TR-400

CROWN
MODEL TR-400

TRADE NAME	Crown Model TR-400
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 12 MA@9 Volts DC
TUNING RANGE—BROADCAST	525 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A3, A5.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2532, 2534, 2537, 2538, 2531

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A3	"
3.	"	600KC	600KC	"	A4	"
4.	"	1400KC	Tune to 1400KC Signal.	"	A5	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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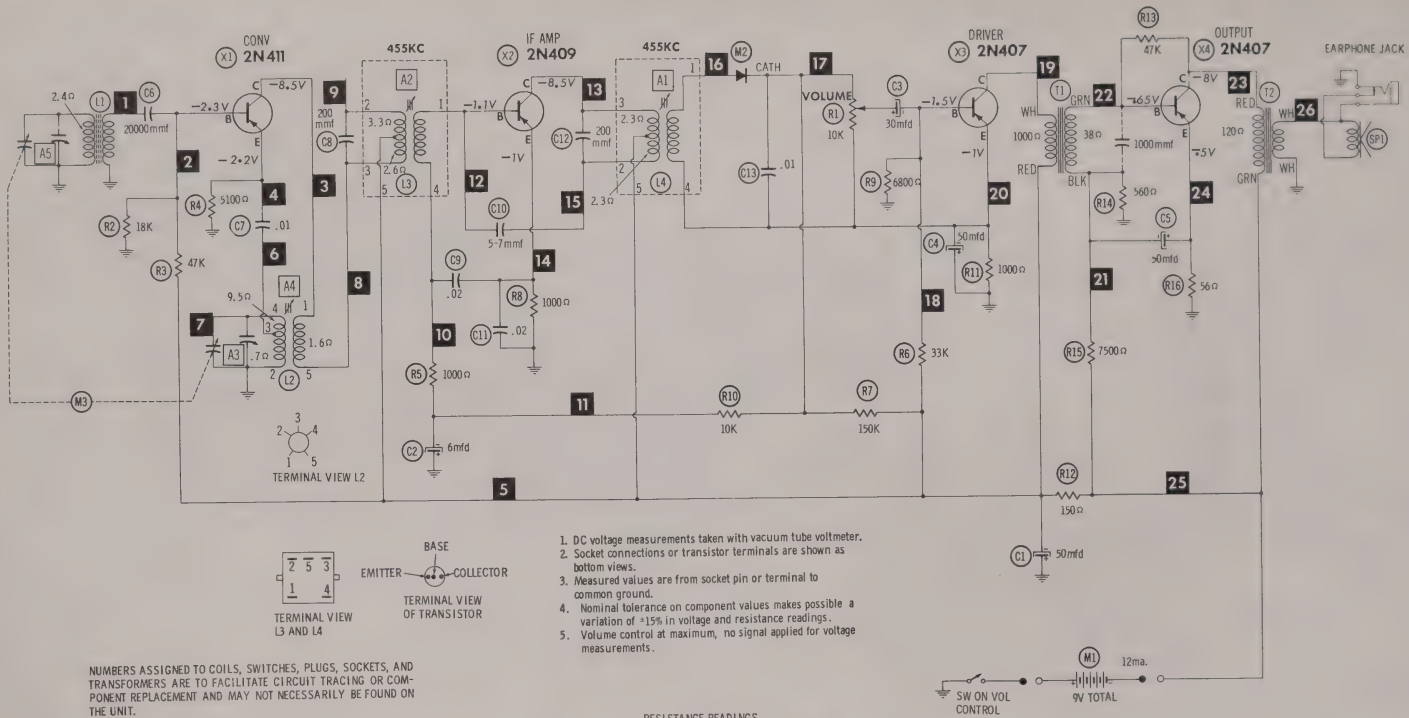
JF903

SET 499 FOLDER 7



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N411	15K	5100Ω	†150Ω
X2	2N409	15K	1000Ω	†150Ω
X3	2N407	6800Ω	1000Ω	†1150Ω
X4	2N407	600Ω	56Ω	†120Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF R12 AND R15.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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CROWN
MODEL TR-400

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter		2N411	2N486	2N411	PNP
X2	2N409	IF Amplifier		2N409	2N484	2N409	PNP
X3	2N407	Driver		2N407	2N362	2N383	PNP
X4	2N407	Output		2N407	2N631	2N383	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	10		XPP-10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C2	6	6		XPP-6006	NLW6-15	TT6X5	ML6-6	TE-1085	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C5	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C7	.01 50V		V84C2S1	DDM-103	H-05S1		TA-110	TG-S10
C8	200		SI 200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C9	.02 500V		V84C2S22	DDM-203	H-05S2		TA-120	TG-S20
C10	5-7							
C11	.02 50V		V84C2S22	DDM-203	H-05S2		TA-120	TG-S20
C12	200		SI 200	DD-201	L10T2	CCD-201	GP320	10TCC-T20
C13	.01 50V		V84CS1	DDM-103	H-05S1		TA-110	TG-S1

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	B16-216					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	18K	
R3	47K	
R4	5100Ω	
R5	1000Ω	
R6	33K	

ITEM No.	RATING	REMARKS
R7	150K	
R8	1000Ω	
R9	6800Ω	
R10	10K	
R11	1000Ω	

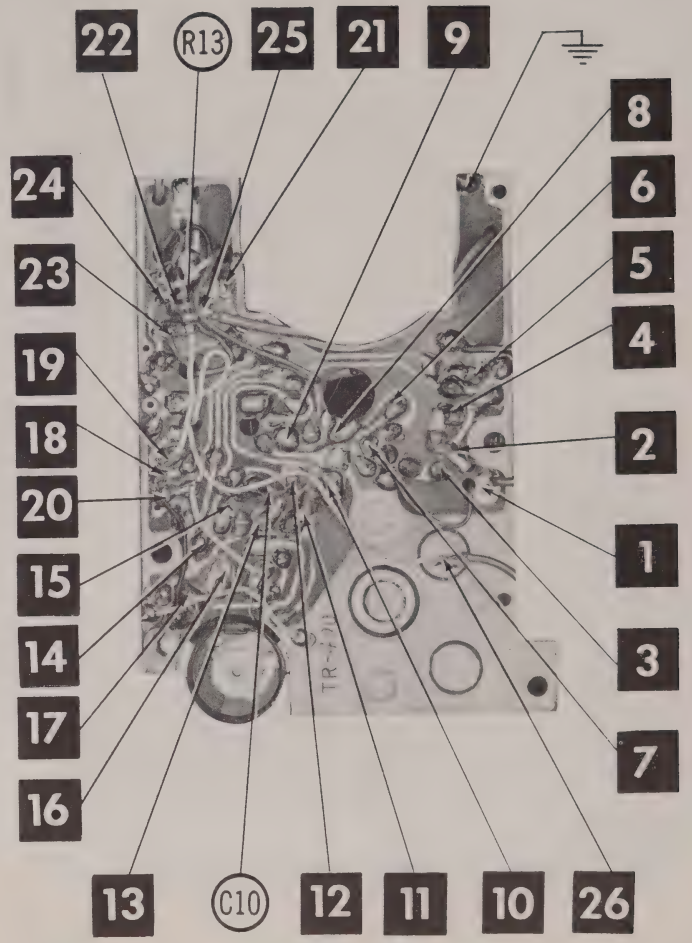
ITEM No.	RATING	REMARKS
R12	150Ω	
R13	47K	
R14	560Ω	
R15	7500Ω	
R16	56Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CROWN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



CROWN
MODEL TR-400

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	1	TRT-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	580Ω	6-8Ω	TRT-6				TA-23			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6M		226		M1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46		1N60	1N60	1N60	Detector (Pigtail)

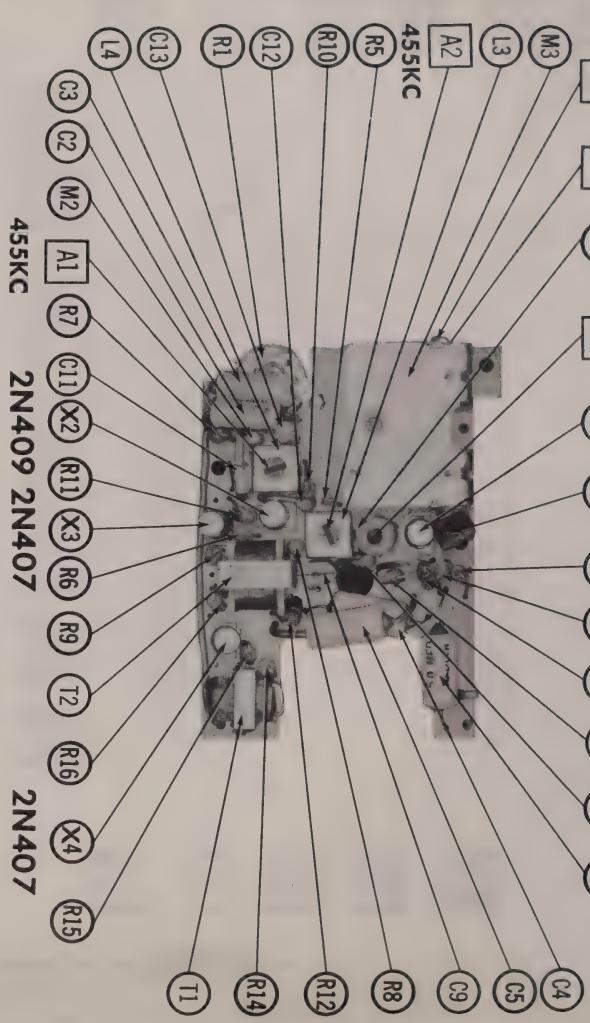
MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap. Printed Board	TR-400	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

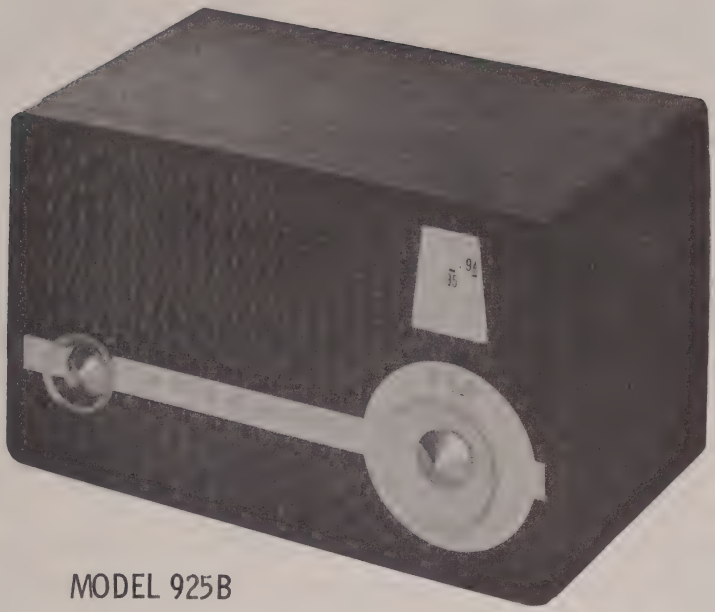
CHASSIS—TOP VIEW



PHOTOFACT® Folder

EMERSON MODELS 920B, 925B (Ch. 120494B)

EMERSON MODELS 920B, 925B (Ch. 120494B)

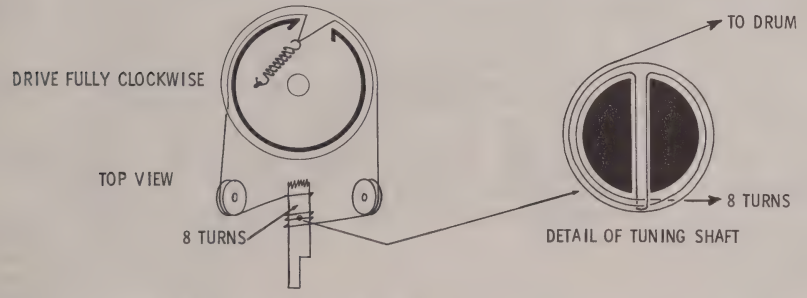


MODEL 925B

EMERSON MODELS 920B, 925B (Ch. 120494B)

TRADE NAME	Emerson Models 920B, 925B (Ch. 120494B)	
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd Street, New York 11, N. Y.	
TYPE SET	AC-DC Operated 5 Tube FM Receiver	
POWER SUPPLY	105-125 Volts AC-DC	RATING 31 Watts, .32 Amp. @ 117 Volts AC
TUNING RANGE	FREQ. MOD. 88 - 108MC	

TUNING DRIVE CORD STRINGING



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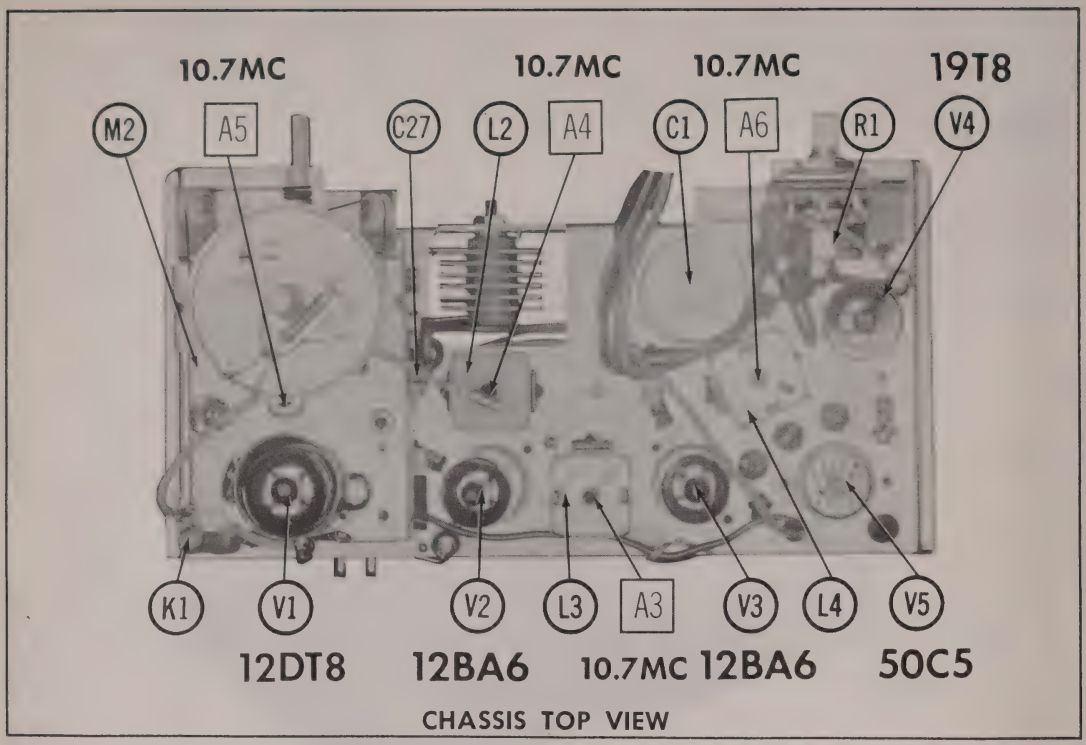
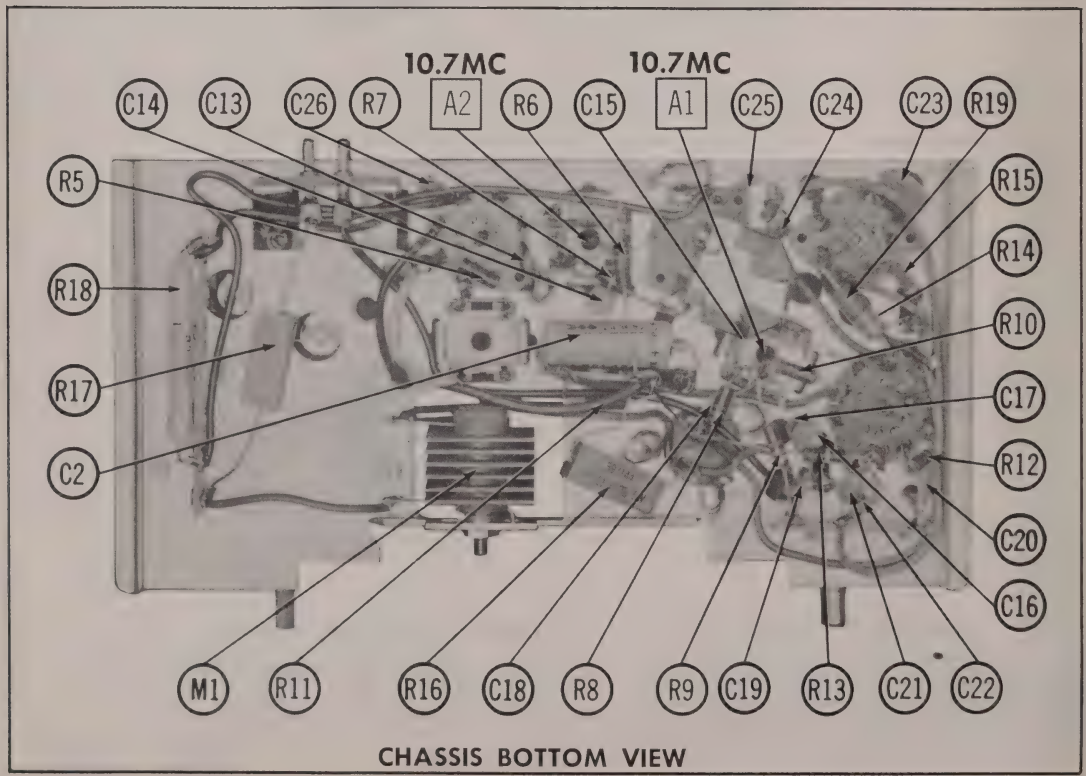
JI906

SET 499 FOLDER 8



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier - Converter	12DT8	V4	Ratio Det. - AF Amp.	19T8
V2	1st IF Amplifier	12BA6	V5	Output	50C5
V3	2nd IF Amplifier	12BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	925496	AFH2-19	XB0181	FP216.2	TMD-17	TVL-2442.1	
B	▲50	150							
C2	2	50	925434	PRS1300	BBR2-50	TC302	TD-2-50	TVA-1301	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000				EF-001	MFT-1000		CCF-102	CT280A	
C4								*		
C5	9	N080			N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C6	15	N750								
C7					N750-DI68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C8	68	N750						*		
C9	5	N080	5%					*		10TCR-V82
C10	8.5	N220	5%		EF-001	MFT-1000		CCF-102	CT280A	
C11	1000									
C12	450				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C13	4700				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C14	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C15	1500							*		
C16	6.8	N150	10%	#929014	BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C17	1500				DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C18	100		10%		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C19	1500				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C20	4700				DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C21	220				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C22	4700				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C24	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C25	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C26	1500				EF-001	MFT-1000		CCF-102	CT280A	
C27	1000									

Emerson Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	390615	B-69	A47-1meg-S	Q11-137	U54	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2200Ω	
R3	47K	
R4	5600Ω	
R5	1meg	
R6	330Ω	
R7	100K	

ITEM No.	RATING	REMARKS
R8	330Ω	
R9	47K	
R10	1meg	
R11	22K	
R12	4.7meg	
R13	220K	

ITEM No.	RATING	REMARKS
R14	470K	
R15	150Ω	
R16	900Ω 5W	
R17	22Ω 5W	
R18	100Ω 5W	
R19	470Ω 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	Antenna Filter	470mmf, .3-1meg	923152	Centralab RC-471 Sprague ACI-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA EMERSON PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	†						
L2	1st IF Trans.	720361						
L3	2nd IF Trans.	720307	16-3487	16-3487	FM-254	1463		
L4	Ratio Det.	708341	17-3498	17-3498	FM-255	1465		

† Wound on 10mmf capacitor (Part of M2).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2000Ω	3-4Ω	(Part of SP1)	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA EMERSON PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	180217 *	4A07	* Includes T1.

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA EMERSON PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.080A	817072 *	T100 *	1235AH *	160A *	SR200 ♦	* Selenium ♦ Silicon

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	Tuner Assembly	471202	FM, Complete

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	461214	Tuning, Models 920B, 925B
Knob	461176	Volume, Models 920B, 925B
Dial	962934	Plastic, Models 920B, 925B
Cabinet	141091	Ivory, Model 920B
Cabinet	141091A	Pink, Model 920B
Cabinet	141091B	White, Model 920B
Cabinet	141091C	Turquoise, Model 920B
Cabinet	141091D	Ebony, Model 920B
Cabinet	141067	Ivory, Model 925B
Cabinet	141067A	Pink, Model 925B
Cabinet	141067B	White, Model 925B
Cabinet	141067C	Turquoise, Model 925B
Cabinet	141067D	Ebony, Model 925B

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1, A6 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A2, A3, A4 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7, A8 .... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point A to chassis. The junction of these two resistors is alignment point C as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side to ungrounded tube shield of RF Amp.-Converter tube. Low side side to chassis.	10.7MC (Unmod.)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120Ω sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield of RF Amp.-Converter tube. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5	Disconnect stabilizing Cap. C2. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2.
2.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A6	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	106MC (Unmod.)	106MC	DC probe to point Ⓐ. Common to chassis.	A7, A8	Adjust for maximum deflection.

FIG. 1

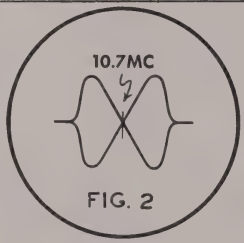
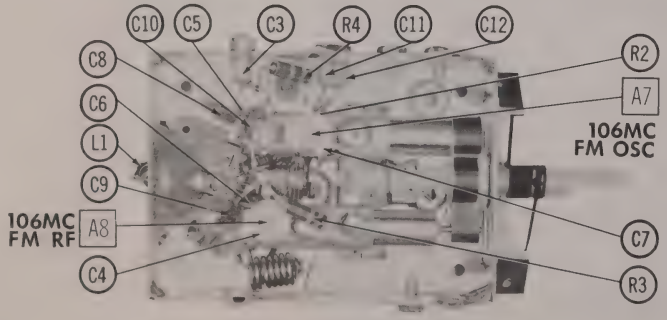
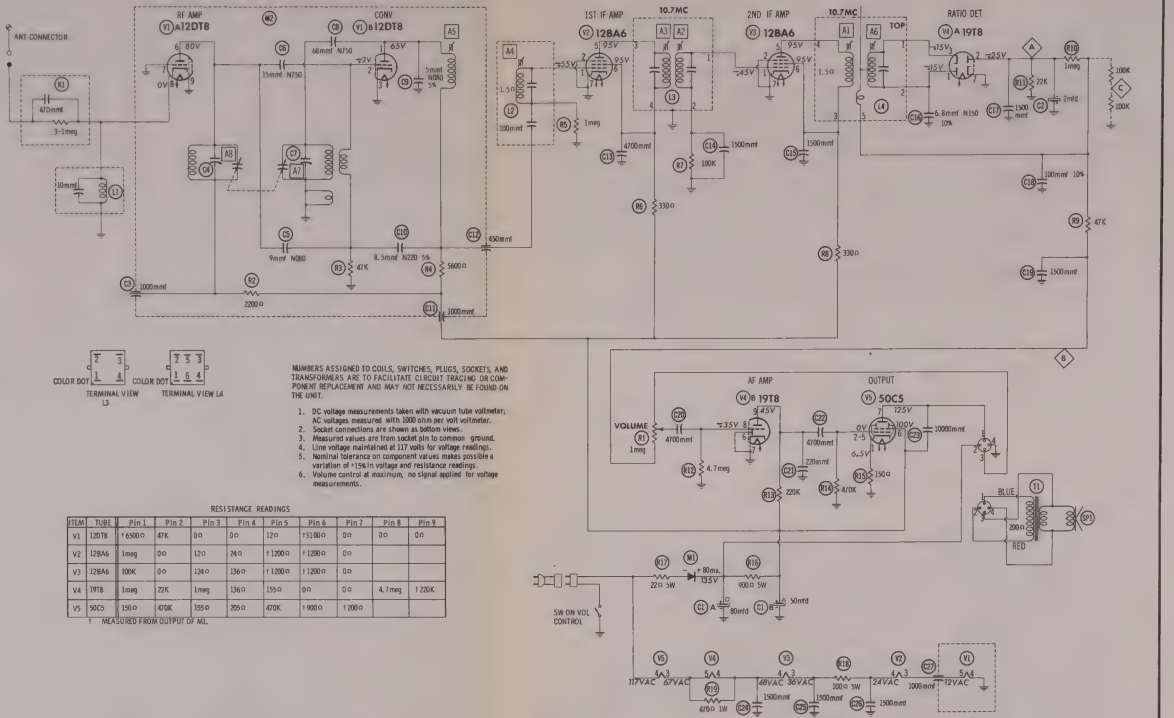


FIG. 2



FM RF SUB CHASSIS



COLOR DOT
TERMINAL VIEW L3

COLOR DOT
TERMINAL VIEW L4

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†6500Ω	47K	0Ω	0Ω	12Ω	†3100Ω	0Ω	0Ω	0Ω
V2	12BA6	1meg	0Ω	12Ω	24Ω	†1200Ω	†1200Ω	0Ω		
V3	12BA6	100K	0Ω	124Ω	136Ω	†1200Ω	†1200Ω	0Ω		
V4	19T8	1meg	22K	1meg	136Ω	155Ω	0Ω	0Ω	4.7meg	†220K
V5	50C5	150Ω	470K	155Ω	205Ω	470K	†900Ω	†200Ω		

† MEASURED FROM OUTPUT OF MIL.

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EMERSON MODELS 920B, 925B (Ch. 120494B)

PHOTOFACT® Folder

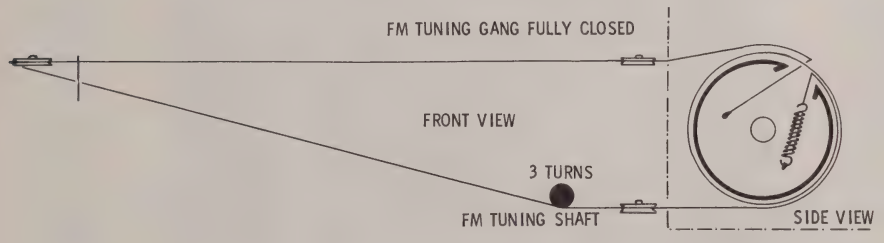
**KNIGHT MODEL
KN-135 (92SU431)**

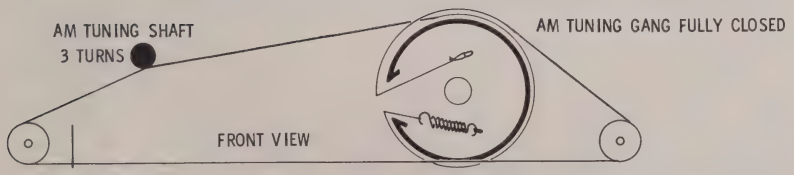
KNIGHT MODEL
KN-135 (92SU431)

KNIGHT MODEL
KN-135 (92SU431)

TRADE NAME	Knight Model KN-135 (92SU431)		
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois		
TYPE SET	AC Operated 8 Tube FM-AM Tuner		
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	29 Watts, .28 Amp. @117 Volts AC (Stereo)
TUNING RANGE—BROADCAST	540 - 1600KC	FREQ. MOD.	88 - 108MC

DIAL CORD STRINGING





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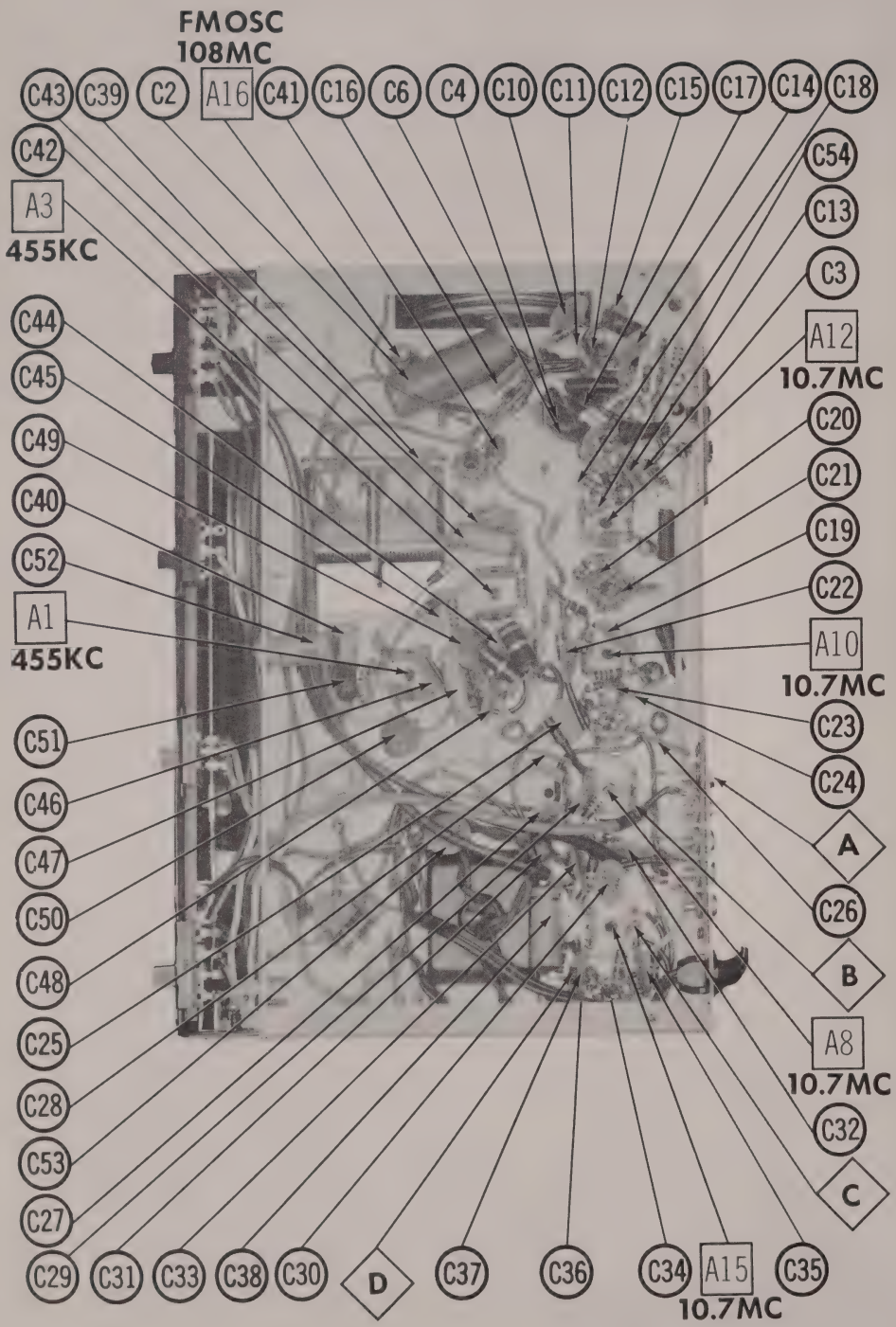
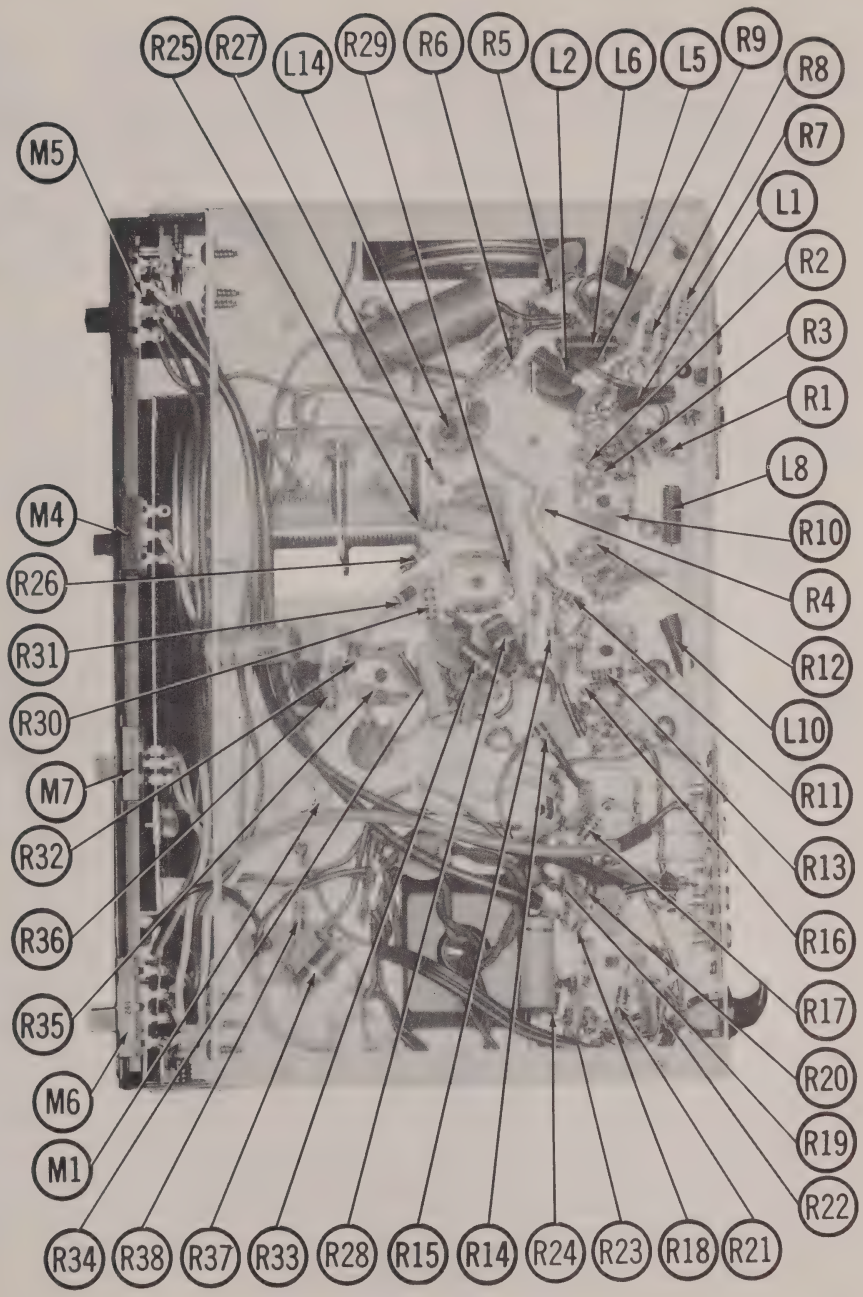
JL916

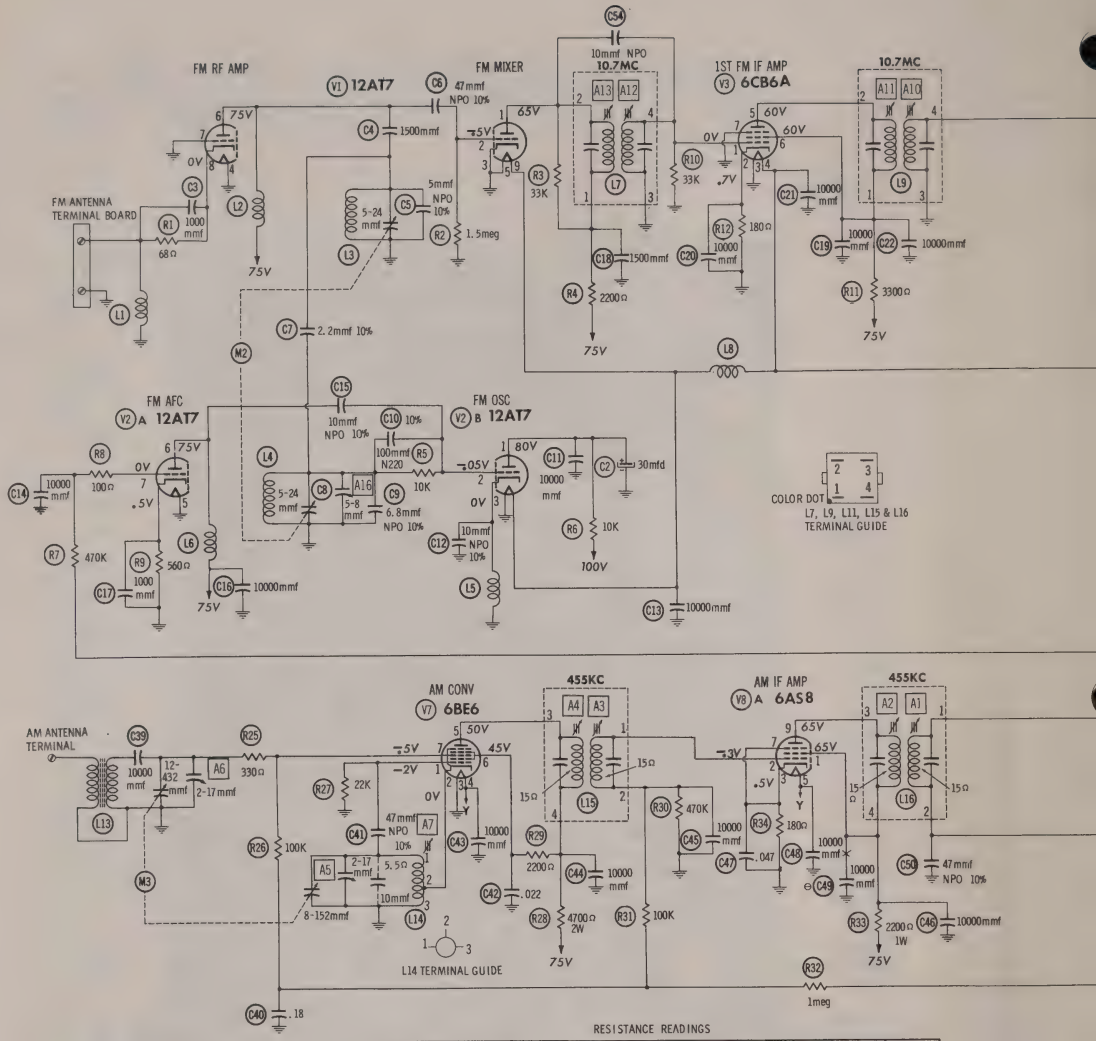
SET 499 FOLDER 9



CHASSIS BOTTOM VIEW—ALIGNMENT & CAPACITOR IDENT.



CHASSIS BOTTOM VIEW—RESISTOR, INDUCTOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†3500Ω	1.5meg	0Ω	0Ω	0Ω	†1300Ω	0Ω	68Ω	.5Ω
V2	12AT7	†10K	10K	.3Ω	0Ω	0Ω	†1300Ω	4meg ▪ 470K	560Ω	.5Ω
V3	6CB6A	.9Ω	180Ω	.4Ω	0Ω	†4600Ω	†4600Ω	0Ω		
V4	6CB6A	.9Ω	180Ω	0Ω	.4Ω	†2300Ω	†3500Ω	0Ω		
V5	6AU6	47K	0Ω	.4Ω	0Ω	†38K	†28K	0Ω		
V6	6AL5	0Ω	100K	.4Ω	0Ω	200K	0Ω	100K		
V7	6BE6	22K	.1Ω	0Ω	.4Ω	†6000Ω	†8200Ω	550K		
V8	6AS8	†3500Ω	450K	180Ω	0Ω	.4Ω	520K	180Ω	0Ω	†3500Ω

ALL MEASUREMENTS TAKEN IN "STEREO" POSITION.
† MEASURED FROM OUTPUT OF M1.
▪ MEASURED WITH "AFC SWITCH" OFF.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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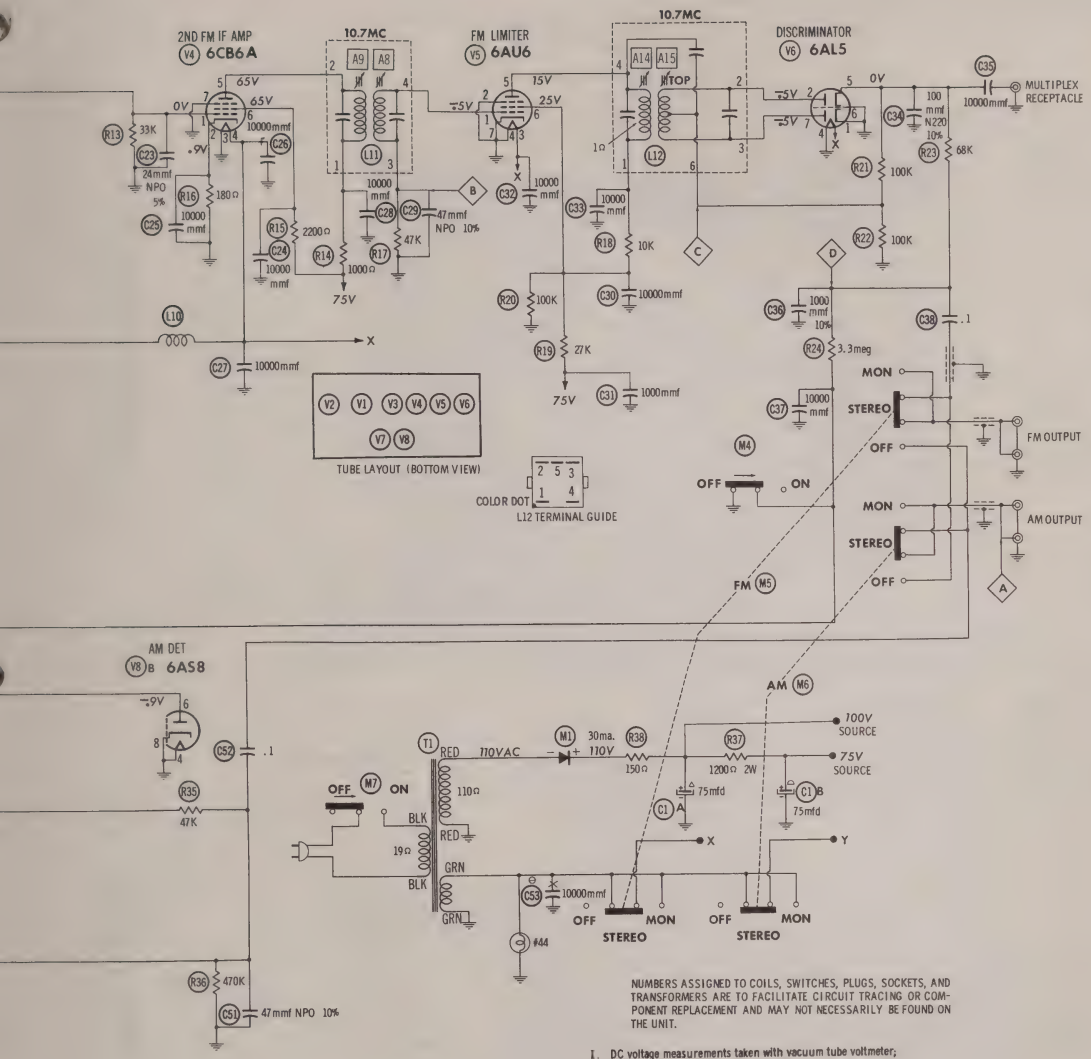


NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

KNIGHT MODEL
KN-135 (92SU431)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.

Suggested Alignment Tools
A1 thru A4, A7, A14, A15.... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A16..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8 thru A13..... GENERAL CEMENT #5097, 8727
WALSCO #2515

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	AC Probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6	Adjust for maximum deflection.
3.	"	600KC	600KC	"	A7	Adjust for maximum deflection. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A14	"
6.	"	"	"	DC probe to point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (B). Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 27K to point (C). Low side to chassis.	A14	"
6.	"	"	"	Vert. amp. to point (D). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	88MC (Unmod.)	(FM) 88MC	DC probe to point (B). Common to chassis.	L4	Adjust for maximum deflection.
8.	"	108MC	108MC	"	A16	"
9.	"	88MC	88MC	"	L3	Adjust for maximum deflection. Repeat Steps 7, 8, and 9.

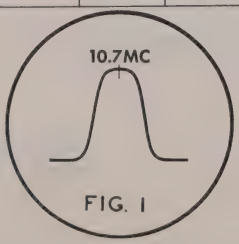


FIG. 1

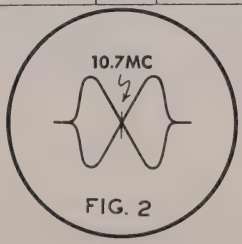


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	12AT7	V5	FM Limiter	6AU6
V2	FM Osc. -FM AFC	12AT7	V6	Discriminator	6AL5
V3	FM IF Amplifier	6CB6A	V7	AM Converter	6BE6
V4	FM IF Amplifier	6CB6A	V8	AM IF Amp. -AM Det.	6AS8

ELECTROLYTIC CAPACITORS

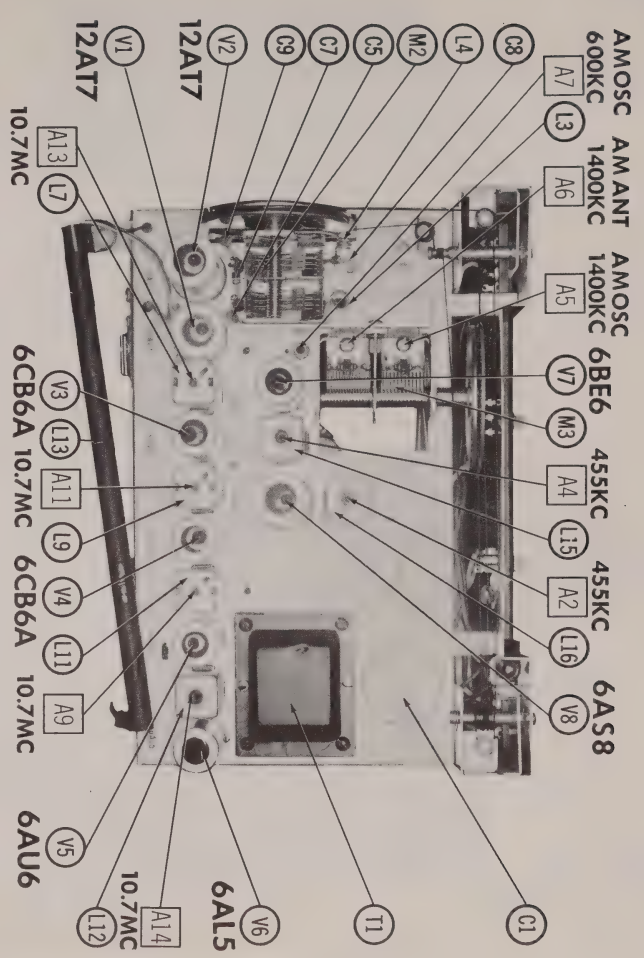
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲75	150	CE-157A	AFH2-20	XB0183	FP214.5		TVL-2442.4	
B	▲75	150							
C2	30	150	CE-306H	PRS1460	BR3015	TC47	TD-30-150	TVA-1412	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C5	5 NPO 10%		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C6	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C7	2.2 10%		NPO-SI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C8	5-8			829-10				
C9	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C10	100 N220 10%					*		10TCR-T10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	24 NPO 5%			TCZ-24	C10Q24C	CCTO-240	CNO-425	10TCC-Q25
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	100 N220 10%					*		10TCR-T10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	.18 200V		P288N-2		CUB2P2	2DP-4-204	GEM-402	4TM-P2
C41	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C42	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CHASSIS—TOP VIEW



KNIGHT MODEL KN-135 (92SU431)

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	.047 200V		P488N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C51	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C52	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C53	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10

Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	68Ω	
R2	1.5meg	
R3	33K	
R4	2200Ω	
R5	10K	
R6	10K	
R7	470K	
R8	100Ω	
R9	560Ω	
R10	33K	
R11	3300Ω	
R12	180Ω	
R13	33K	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	2200Ω	
R16	180Ω	
R17	47K	
R18	10K	
R19	27K	
R20	100K	
R21	100K	
R22	100K	
R23	68K	
R24	3.3meg	
R25	330Ω	
R26	100K	

ITEM No.	RATING	REMARKS
R27	22K	
R28	4700Ω 2W	
R29	2200Ω	
R30	470K	
R31	100K	
R32	1meg	
R33	2200Ω 1W	
R34	180Ω	
R35	47K	
R36	470K	
R37	1200Ω 2W	
R38	150Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		KNIGHT PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil		19-1007	19-1007	BC-560	4590		.68uh
L2	RF Choke		19-1003	19-1003	BC-564	4608		3.3uh
L3	FM RF Coil							
L4	FM Osc. Coil							
L5	Cathode Choke		19-1007	19-1007	BC-560	4590		.68uh
L6	RF Choke		19-1007	19-1007	BC-560	4590		.68uh
L7	1st FM IF Trans.	LR-0032	16-3487	16-3487	FM-254	1463		
L8	Fil. Choke		19-1007	19-1007	BC-560	4590		.68uh
L9	2nd FM IF Trans.	LR-0033	16-3487	16-3487	FM-254	1463		
L10	Fil. Choke		19-1007	19-1007	BC-560	4590		.68uh
L11	3rd FM IF Trans.	LR-0033	16-3487	16-3487	FM-254	1463		
L12	Discriminator	LQ-0181	17-3494	17-3494	FM-253	1464		
L13	Loopstick		14-7002	14-7002	BC-418	705-A		
L14	AM Osc. Coil					70-OSC		
L15	1st AM IF Trans.	LR-0041	16-6758	16-6758	BC-352	12-C1	RF-1	
L16	2nd AM IF Trans.	LR-0041	16-6758	16-6758	BC-353	12-C2	RF-2	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .28A	110V@ .030A	6.3V@ 2.6A	LP-0277						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	KNIGHT PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.030A		RS050 *	K1734 *	50*	SR200 ♦	* Selenium ♦ Silicon

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M2	Tuning Cap		FM
M3	Tuning Cap		AM (Ant. 14-432mmf, Osc. 8-152mmf)
M4	Switch		AFC (SPST Slide Type)
M5	Switch		Stereo-Monaural, FM (3 Position DP Slide Type)
M6	Switch		Stereo-Monaural AM (3 Position DP Slide Type)
M7	Switch		Power Off-On (SPST Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

KNIGHT MODEL KN-610 (92SX435)

KNIGHT MODEL KN-610 (92SX435)

KNIGHT MODEL KN-610 (92SX435)

TRADE NAME	Knight Model KN-610 (92SX435)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago, Illinois
TYPE SET	AC Operated 5 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 56 Watts, .54 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JX884

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Preamplifier	ECC83/12AX7
V2	AF Amp.-Phase Inv.	ECC83/12AX7
V3	Output	6BQ5 (EL84) *
V4	Output	6BQ5 (EL84) *
V5	Rectifier	EZ80/6V4

CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400		AFH4-78	D0640	FP429		TVLS-4657.3*	
B	■30	350							
C	▲10	300							
D	20	25							
C2A	■10	250			A0430	FP384.16		TVLS-2500 *	
B	▲100	15			BBR100-25				

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	5000 10%		DI-5000		PM6D5	CCD-502	B-250	5HK-D50
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-415	4TM-S47
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-415	4TM-S47
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	VCK-2M1T	BT-78	A47F3-2mgg	Q18-139X	UT-451	Volume
	1meg Tap							
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	2meg	½	TCK-2M	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	½	TCK-500K-WS	B-60-S	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

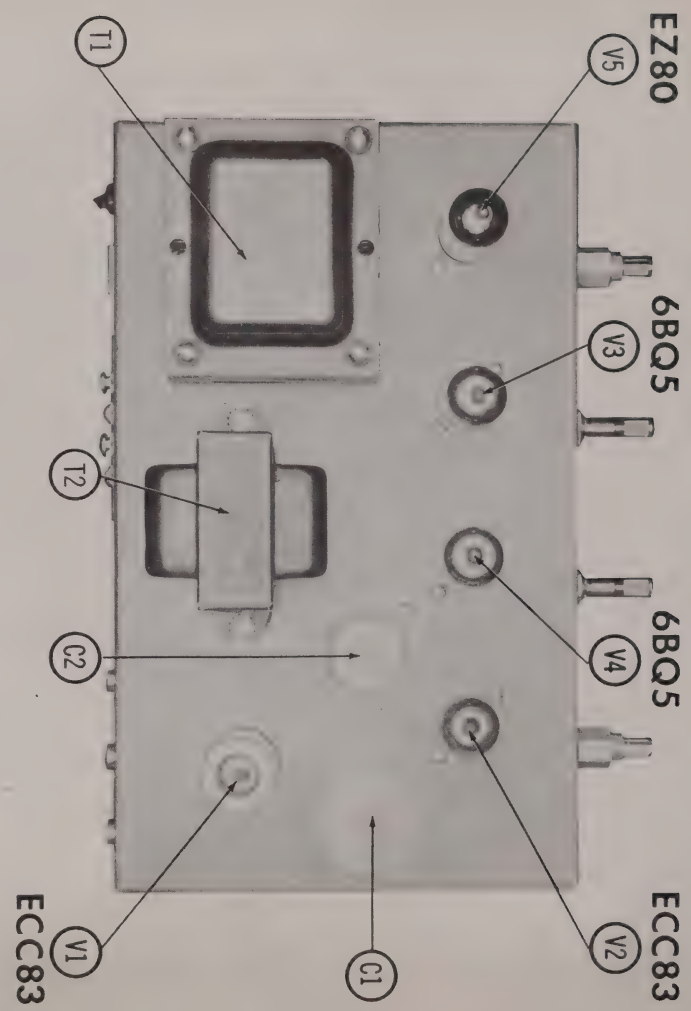
ITEM No.	RATING	REMARKS
R4	4.7meg	
R5	100K	
R6	10K	Note 1
R7	100K	
R8	1000Ω	
R9	18K	
R10	1meg	
R11	100K	

ITEM No.	RATING	REMARKS
R12	1000Ω	
R13	47K	
R14	100K	
R15	220K	
R16	100Ω	
R17	47K	
R18	220K	
R19	1000Ω	

ITEM No.	RATING	REMARKS
R20	4700Ω	
R21	220K	
R22	150Ω 7W	
R23	270K	
R24	47K	
R25	1000Ω	
R26	5600Ω 2W	

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	KNIGHT PART No.	REPLACEMENT DATA
K1	Selector Switch Comp.	800mmf, 2000mmf, 3000mmf, 33K, 100K, 100K, 3.3meg, 3.3meg	PC-1960	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .54A	620 VCT @ .070A	6.3 VCT @ 2.7A	TP-9	24R21				24R21	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω CT	16Ω Tap @ 8Ω, 4Ω	T0-10	24S17 ①	A-3028 ①			24S17 ①		

① Drill New Mounting Hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1½A 250V			312001.5 (3AG 1½A 250V)	121002 ①	AGC 1½	4051 ①

① 2 Used.

MISCELLANEOUS

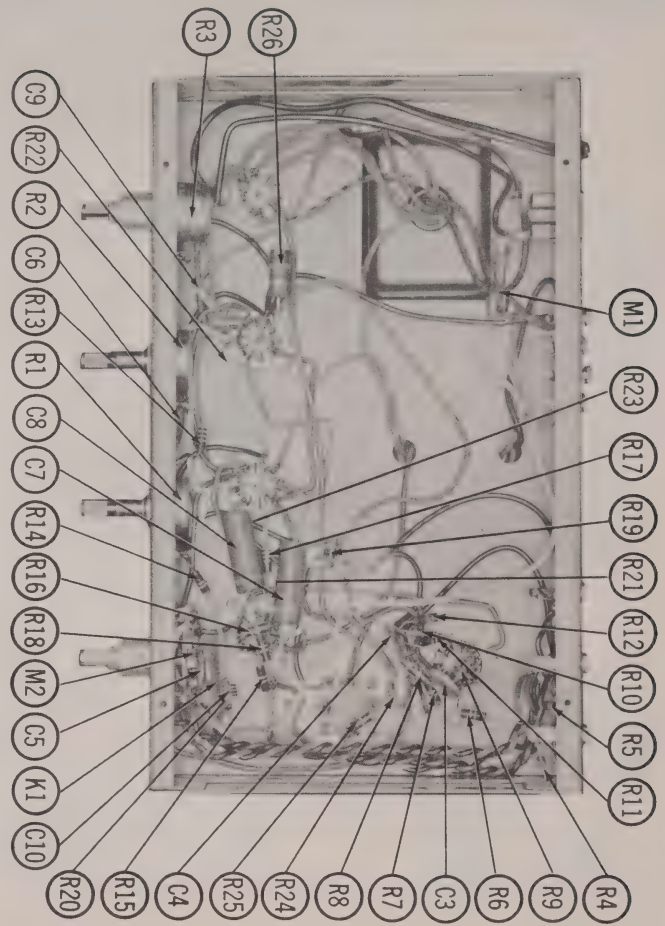
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M2	Switch		Function Selector (Rotary)

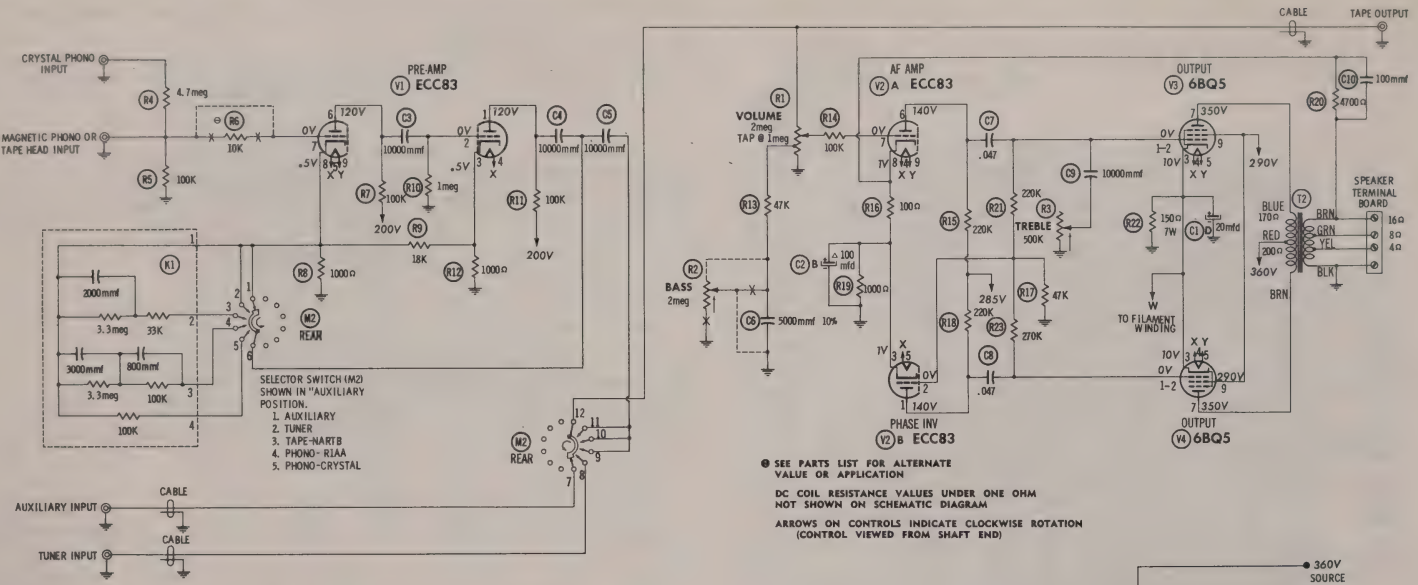
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

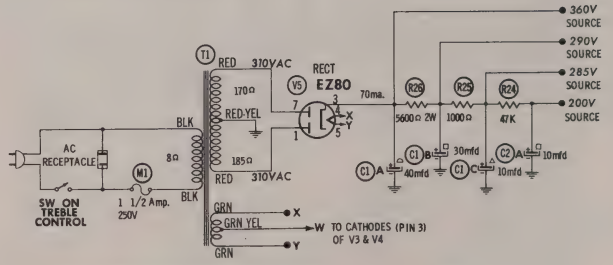
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†155K	1meg	1000Ω	150Ω	150Ω	†155K	110K	1000Ω	150Ω
V2	ECC83 12AX7	†225K	47K	1000Ω	150Ω	150Ω	†225K	100K	1100Ω	150Ω
V3	6BQ5	270K	270K	150Ω	150Ω	150Ω	TP	†170Ω	NC	†5600Ω
V4	6BQ5	310K	310K	150Ω	150Ω	150Ω	TP	†200Ω	TP	†5600Ω
V5	EZ80 6V4	185Ω	NC	¶	150Ω	150Ω	NC	170Ω	NC	TP

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V5.
NC NO CONNECTION
TP TIE POINT

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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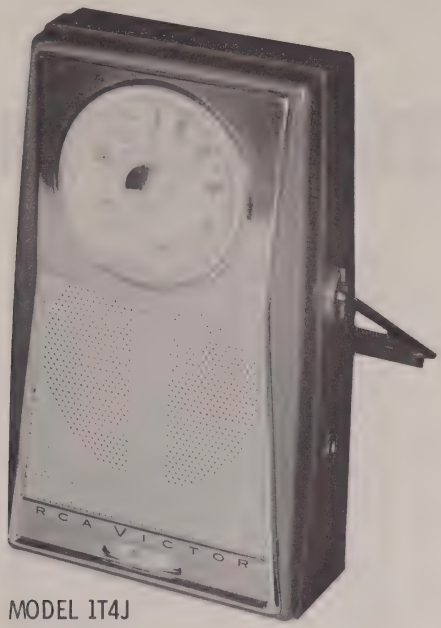
KNIGHT MODEL KN-610 (92SX435)

PHOTOFACT® Folder with CIRCUITRACE®

RCA VICTOR MODELS 1T4E, H, J, RK249 (Ch. RC-1197)

RCA VICTOR MODELS 1T4E, H, J, RK249 (Ch. RC-1197)



MODEL 1T4J

TRADE NAME	RCA Victor Models 1-T-4E, 1-T-4H, 1-T-4J (Ch. RC-1197); RK-249 (Battery Charger Unit)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 11MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE	BROADCAST 535 - 1620KC 40MA @ 6 Volts DC (Signal, Normal Volume)

WHEN REMOVING PRINTED BOARD FROM CABINET, GENTLY PULL PRINTED BOARD FROM CASE FRONT AND DIAL KNOB. NO ATTEMPT SHOULD BE MADE TO PULL KNOB FROM SHAFT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A6 ... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, WALSCO #2515, 2531, 2532 8989

A4, A5 ..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291

WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.	Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC	"	A5	"
4.	"	600KC	Tune to 600KC signal	"	A6	Adjust for maximum output while rocking tuning gang. Repeat steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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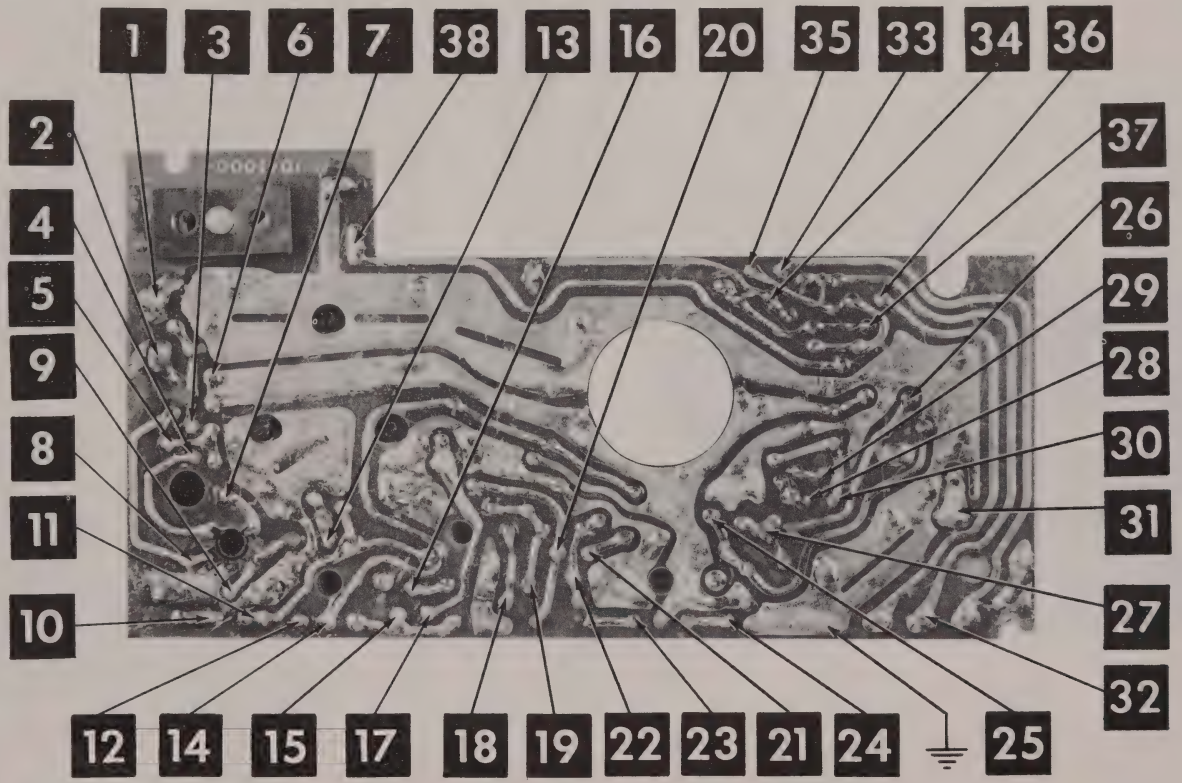
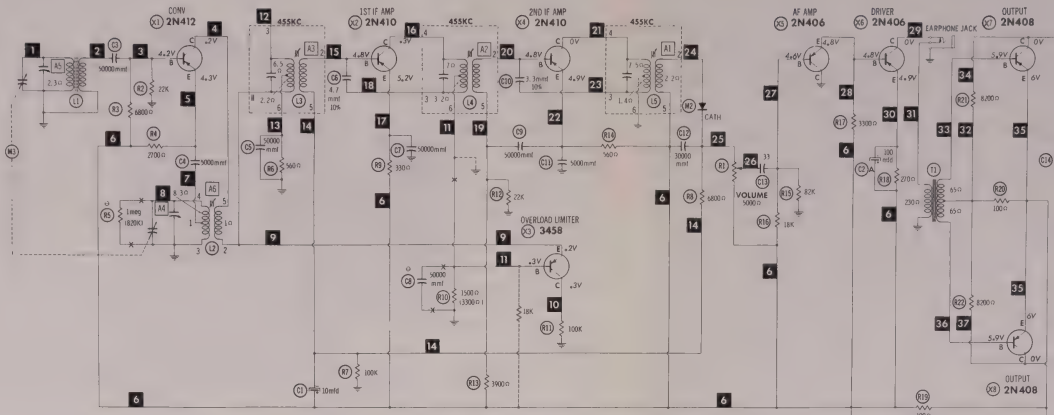
JF943

SET 499 FOLDER 11



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION.

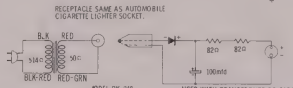
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

RECEPTACLE SAME AS AUTOMOBILE CIGARETTE LIGHTER SOCKET.



MODEL RK-249 BATTERY CHARGER

USED WITH TRANSFORMER OR CIGARETTE LIGHTER RECEPTACLE IN 12V AUTOMOBILE SYSTEMS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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RCA VICTOR MODELS 1T4E, H, J, RK249 (Ch. RC-1197)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	Converter		2N412	2N486	2N412	PNP
X2	2N410	1st IF Amplifier		2N410	2N482	2N410	PNP
X3	3458	Overload Limiter		2N410			PNP
X4	2N410	2nd IF Amplifier		2N410	2N482	2N410	PNP
X5	2N406	AF Amplifier		2N406	2N362	2N406	PNP
X6	2N406	Driver		2N406	2N362	2N406	PNP
X7	2N408	Output		2N408	2N632	2N408	PNP) Matched
X8	2N408	Output		2N408	2N632	2N408	PNP) Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	106114	XPP10010	NLW10-15	TT12X10	MJ10-15	TE-1114	
C2A	100	10	108631	BCD10X8080	ECPAP-7)	TT15X100	TD-100-15	VLPS-2451 *	
B	100	10				TT15X100	TD-100-15		

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	50000		BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C4	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C5	50000		BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C6	4.7 10%		NPO-SI 4.7	TCZ-2R2	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C7	50000		BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C8	50000	Note 1	BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C9	50000		BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C10	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTP-3R3	CNO-533	10TCC-V33
C11	50000		BPD-05	DD-503	WMF1S47E	1DP-2-503	GP150	5HK-S50
C12	30000		BPD-03	DD-303	BYB6S3	CCD-303	GP130	5HK-S30
C13	.33 50V		P288N-33		WMF1P33E			118P3340282
C14	.33 50V		P288N-33		WMF1P33E			118P3340282

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5000Ω	1/4	108633		44S-5K-W			Volume
B	Switch				Not Req.			Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	6800Ω	
R4	2700Ω	
R5	1meg	Note 1
R6	560Ω	
R7	100K	
R8	6800Ω	

ITEM No.	RATING	REMARKS
R9	330Ω	
R10	1500Ω	(3300Ω) *
R11	100K	
R12	22K	
R13	3900Ω	
R14	560Ω	
R15	82K	

ITEM No.	RATING	REMARKS
R16	18K	
R17	3300Ω	
R18	270Ω	
R19	100Ω	
R20	100Ω	
R21	8200Ω	
R22	8200Ω	

Note 1. Not used in some versions. Other versions may use 820K.
* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RCA Victor PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	108634						
L2	Osc. Coil	108160						
L3	1st IF Trans.	108635						
L4	2nd IF Trans.	108636						
L5	3rd IF Trans.	108637						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	108164						

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	3½"	PM	130Ω CT	108163		

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	VS034 * RCB-3 †		930 *		1015 *		M-15R *	* 4 Required † Rechargeable Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		RCA Victor PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2		101615	1N636	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Tuning Cap.	108632	2 Gang
	Printed Board	108675	Assembly, Less Antenna, Tuning Gang, Volume Control, Driver Transformer, & Transistors
	Earphone	RK-219A	(2000Ω Impedance)

CABINETS & CABINET PARTS

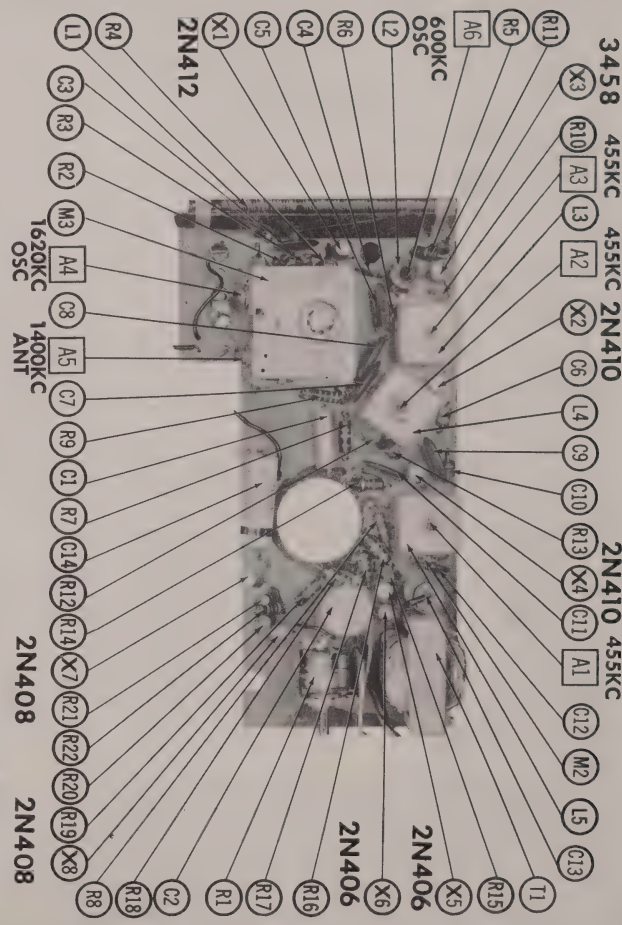
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108645	Tuning
Knob	108642	Volume, Model 1-T-4E only
Cabinet	Y7092	Model 1-T-4E
Cabinet	Y7093	Model 1-T-4H
Cabinet	Y7094	Model 1-T-4J
Handle	108646	Model 1-T-4E
Handle	108647	Model 1-T-4H
Handle	108648	Model 1-T-4J

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



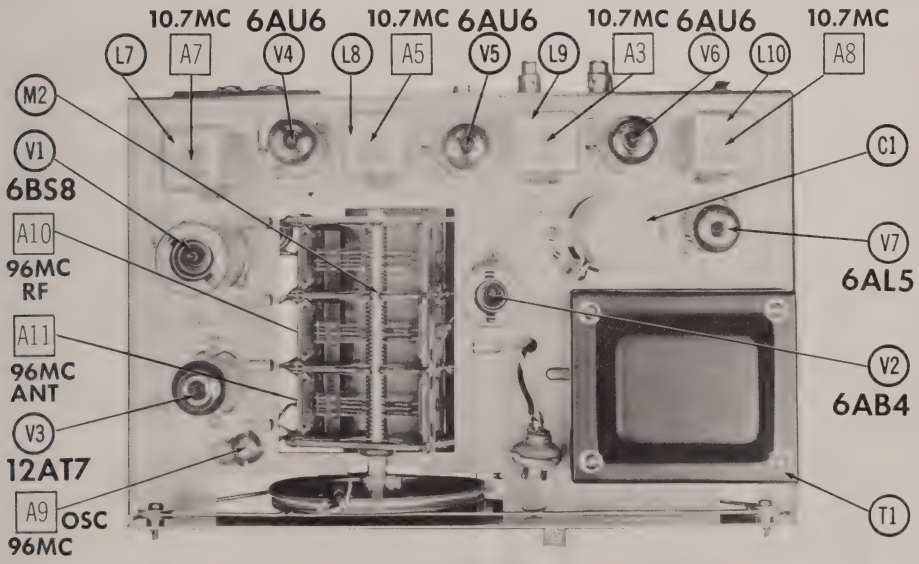
PHOTOFACT® Folder

**REALISTIC
MODEL T-III**

REALISTIC
MODEL T-III

REALISTIC
MODEL T-III

TRADE NAME	Realistic Model T-III
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass
TYPE SET	AC Operated 7 Tube FM Tuner
POWER SUPPLY	110-120 Volts AC, 60 Cycles
TUNING RANGE—FM	88 — 108MC RATING 25 Watts, .24 Amp. @117 Volts AC



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JJ939

SET 499 FOLDER 12

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	6BS8
V2	Mixer	6AB4
V3	Osc.-AFC	12AT7
V4	1st IF Amplifier	6AU6
V5	2nd IF Amplifier	6AU6
V6	Limiter	6AU6
V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		AFH3-10	C0090	FP311.5	TMT-9	TVL-3440	
B	40	150							
C	40	150							
C2	10	150		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	Note 1

Note 1. Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10 +1mmf		NPO-SI 10	TCZ-10	C10Q1C		CNO-410	10TCC-Q10
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	2 +.25mmf	(1) †	NPO-SI 2.0	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C13	3-9			829-10		*		10TCS-Q15
C14	15 N330 10%	(10) †						
C15	100 10%		DI-100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	15 N330 10%			TCA-15		*		10TCS-Q15
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	15 N330 10%			TCA-15		*		10TCS-Q15
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	47 10%			D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	47 10%			D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C32	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C35	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

† Alternate Value.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	10K	
R2	2meg	
R3	470K	
R4	2meg	
R5	1000Ω	
R6	3300Ω	
R7	220Ω	
R8	1000Ω	
R9	820Ω	
R10	10K	
R11	1000Ω	
R12	100Ω	
R13	270K	
R14	5000Ω	
R15	560Ω	
R16	75K	
R17	1000Ω	
R18	150Ω	
R19	1000Ω	
R20	150Ω	
R21	100K	
R22	10K	
R23	15K	
R24	100K	
R25	100K	
R26	100K	
R27	56K	
R28	3.3meg	
R29	300Ω 5W	
R30	300Ω 5W	
R31	33Ω 5W	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA REALISTIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil							
L2	RF Choke		19-1000	19-1000	BC-561	4602		1uh
L3	RF Choke		19-1000	19-1000	BC-561	4602		1uh
L4	FM RF Coil							
L5	FM Osc. Coil							
L6	RF Choke		19-1000	19-1000	BC-561	4602		1uh
L7	1st IF Trans.		16-3472	16-3472	FM-251	1451		
L8	2nd IF Trans.		16-3472	16-3472	FM-251	1451		
L9	3rd IF Trans.		16-3472	16-3472	FM-251	1451		
L10	Discriminator				FM-250	1452		
L11	Fil. Choke		19-1000	19-1000	BC-561	4602		1, 1uh

TRANSFORMER (POWER)

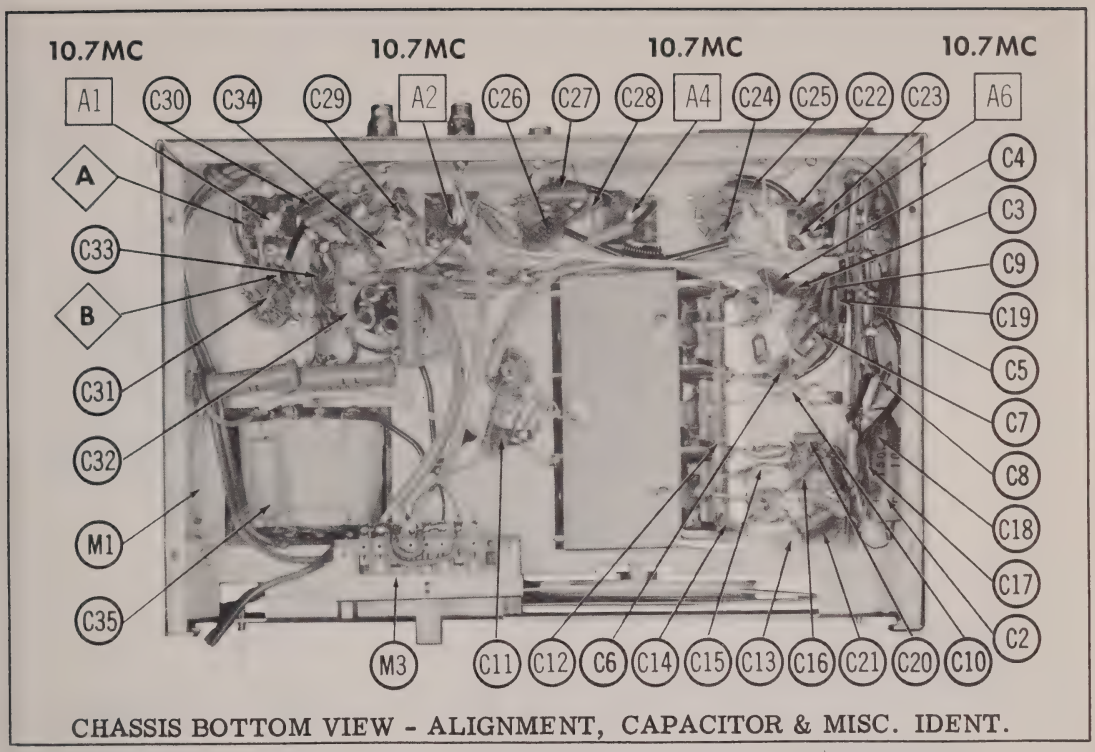
ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA REALISTIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .24A Tap ⓐ 110V Not Used	135V ⓐ .040A	6.3V ⓐ 2.6A							

RECTIFIERS

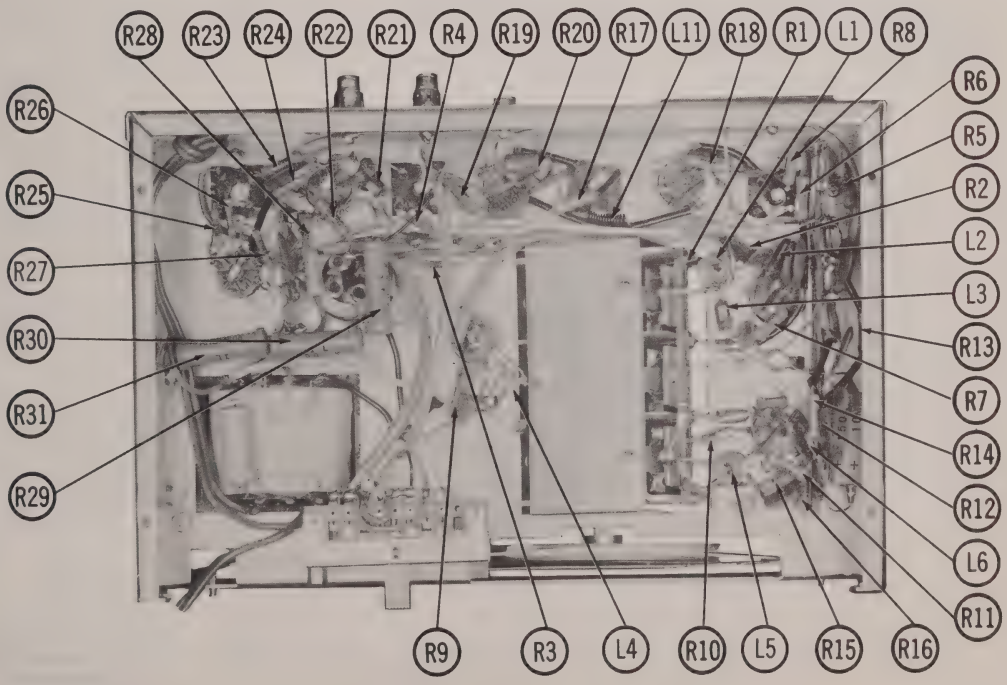
ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA REALISTIC PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.040A	*					* Selenium Type

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M2	Tuning Cap.		3 Gang
M3	Switch		Function (3 Position, Slide Type)
M4	Switch		Power Off-On



CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.
Suggested Alignment Tools: A1 thru A8....GENERAL CEMENT #8721, 8722
WALSCO #2519
A9.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A10, All.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	Across antenna terminals.	10.7MC (Unmod.)	Point of non-interference.	DC probe thru 1meg to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6, A7	Adjust for maximum deflection.
2.	"	"	"	DC probe to point (B). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals.	10.7MC (450KC Swp)	Point of non-interference.	Vert. Amp. thru 27K to point (A). Low side to chassis.	A1, A2, A3, A4, A5, A6, A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A8	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Across antenna terminals with 270Ω in high side.	96MC (Unmod.)	96MC	DC probe thru 1meg to point (A). Common to chassis.	A9, A10, All	Adjust for maximum gain.

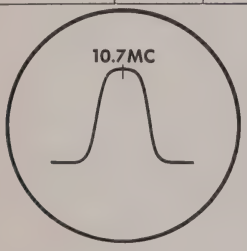


FIG. 1

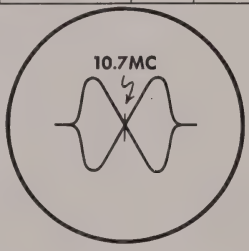
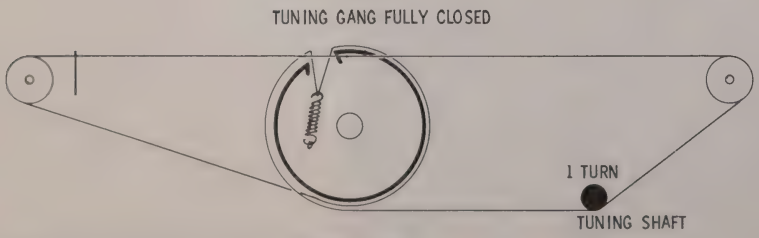
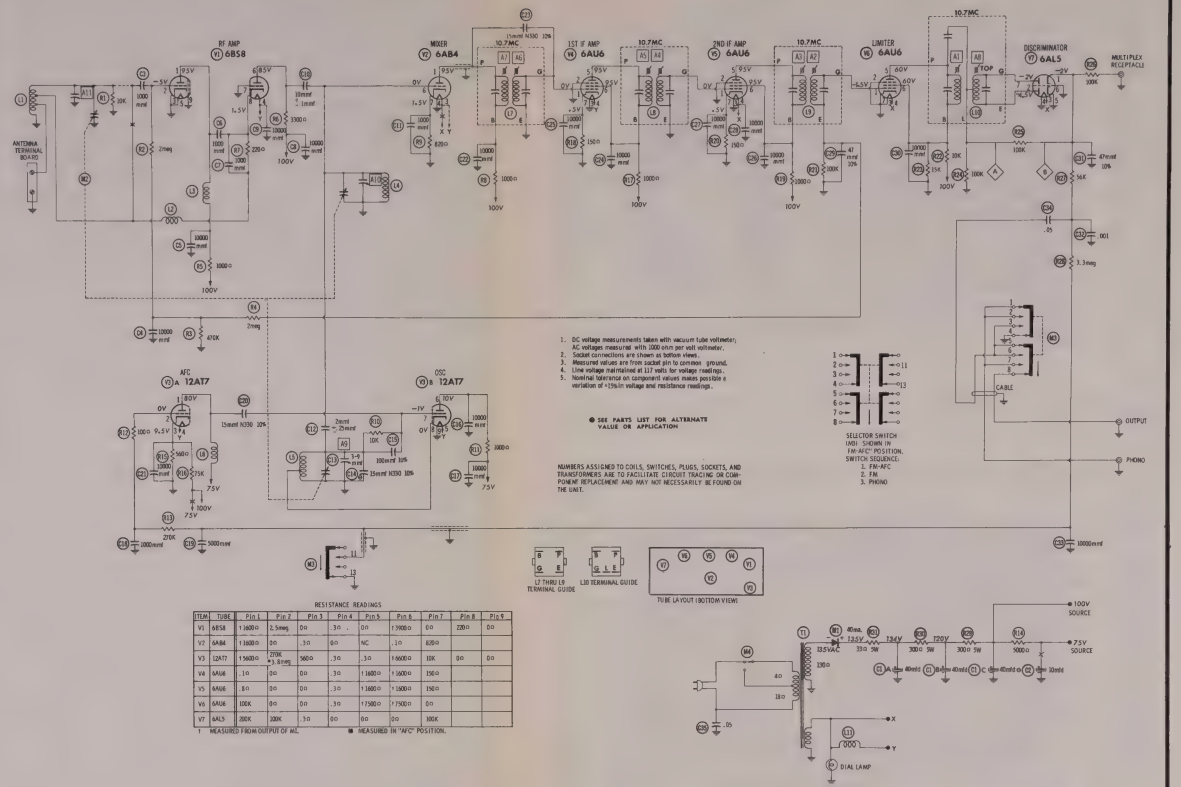


FIG. 2

DIAL CORD STRINGING



FRONT VIEW


RF AMP
Y1 6BS8
MIXER
Y2 6AB4
1ST IF AMP
Y3 6AU6
2ND IF AMP
Y5 6AU6
LIMITER
Y6 6AU6
DISCRIMINATOR
Y7 6AL5
10.7MC
AFC
Y4 12AT7
OSC
Y0 12AT7
ANTENNA TERMINAL BOARD
MULTIPLEX RECEPTACLE
CABLE
OUTPUT
PHONO
100V SOURCE
75V SOURCE
DIAL LAMP
SELECTOR SWITCH (AS SHOWN IN FM-AFC POSITION. SWITCH SEQUENCE: 1. FM-AFC 2. FM 3. PHONO
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
L7 THRU L9 TERMINAL GUIDE
L10 TERMINAL GUIDE
TUBE LAYOUT (BOTTOM VIEWS)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	†1600Ω	2.5meg	0Ω	30	0Ω	†900Ω	0Ω	220Ω	0Ω
V2	6AB4	†1600Ω	0Ω	30	0Ω	NC	10	820Ω		
V3	12AT7	†560Ω	270K *1.8meg	560Ω	30	30	†6600Ω	10K	0Ω	0Ω
V4	6AU6	10	0Ω	0Ω	30	†1600Ω	†1600Ω	150Ω		
V5	6AU6	80	0Ω	0Ω	30	†1600Ω	†1600Ω	150Ω		
V6	6AU6	100K	0Ω	0Ω	30	†7500Ω	†7500Ω	0Ω		
V7	6AL5	200K	100K	30	0Ω	0Ω	0Ω	100K		

† MEASURED FROM OUTPUT OF ML ■ MEASURED IN "AFC" POSITION.

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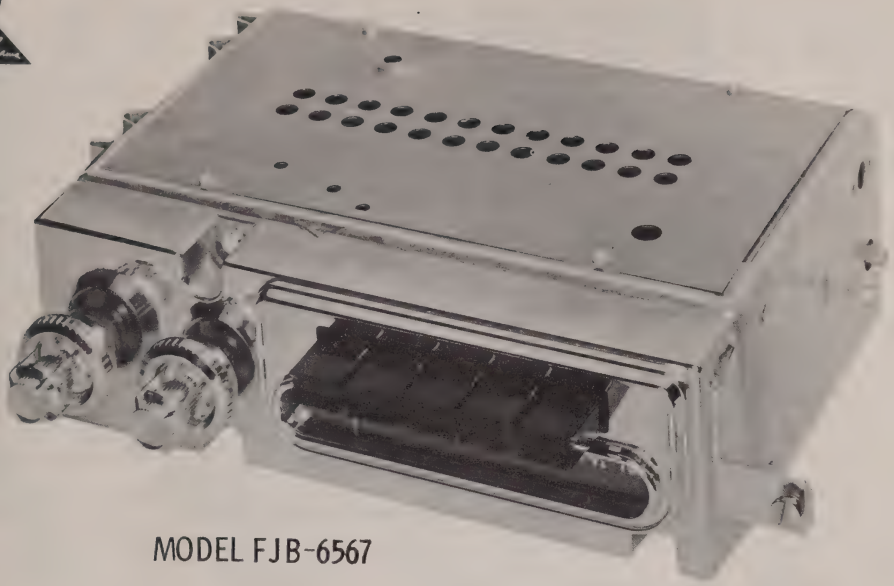
REALISTIC
MODEL T-111

PHOTOFACT® Folder

RIVERSIDE MODELS
FJB-6567, M

RIVERSIDE MODELS
FJB-6567, M



MODEL FJB-6567

RIVERSIDE MODELS
FJB-6567, M

TRADE NAME	Riverside Models FJB-6567, FJB-6567M (For 1959 Plymouth)
SUPPLIER	Montgomery Ward & Co., 619 Chicago 7, Illinois
TYPE SET	Battery Operated 4 Tube Custom Built Automobile AM Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	538 - 1610KC RATING 2 Amp. @12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Antenna receptacle thru dummy (Fig. 1).	"	"	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

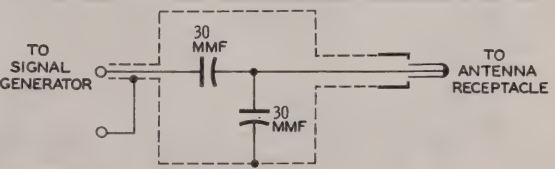


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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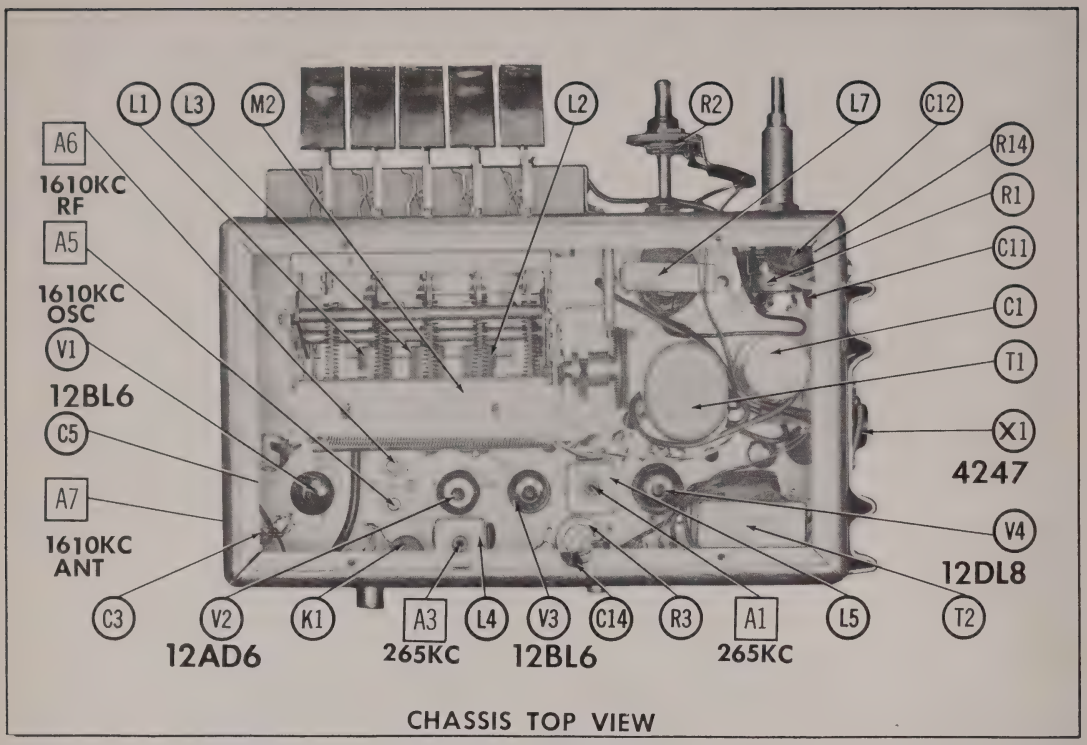
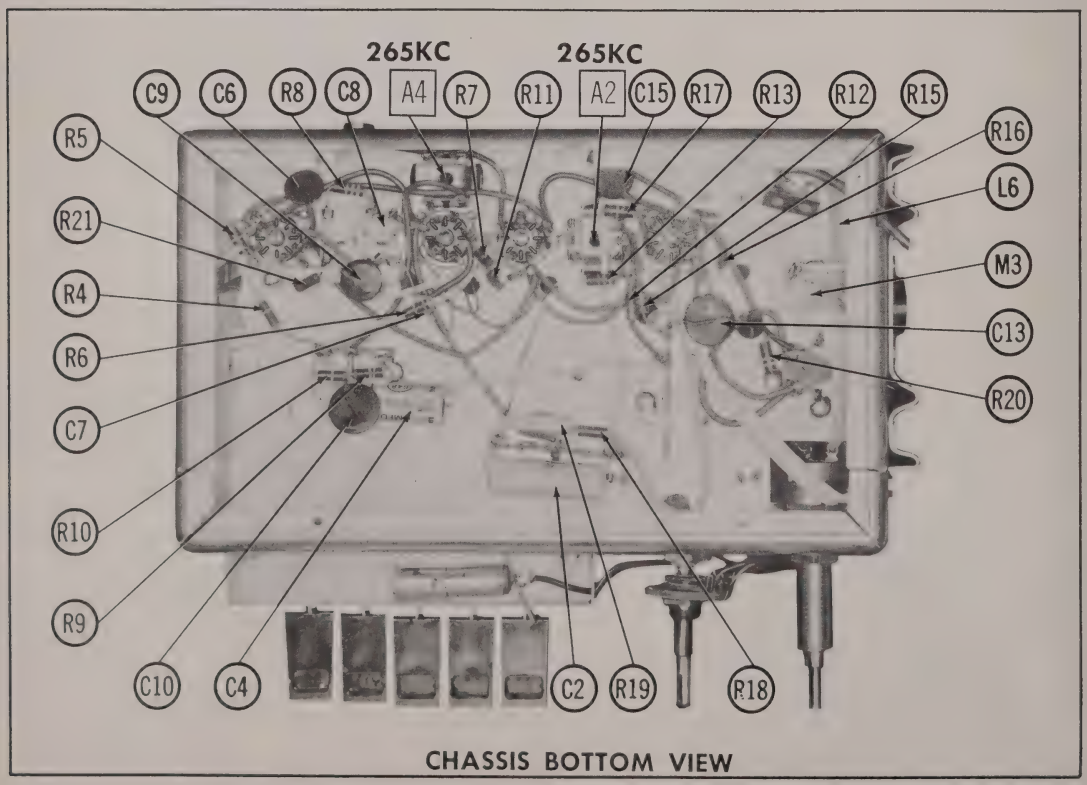
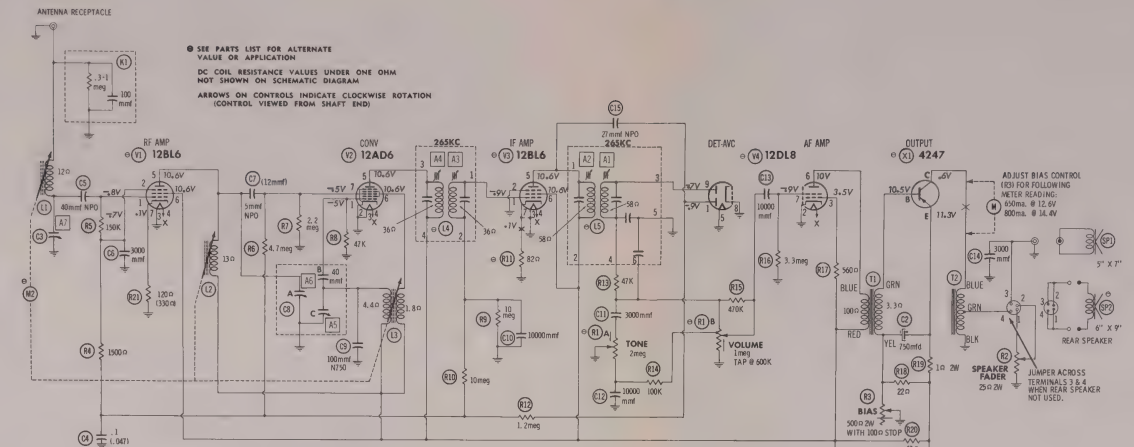
SET 499 FOLDER 13



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5meg	4.9meg	0Ω	1.5Ω	†60Ω	†47Ω	120Ω		
V2	12AD6	47K	0Ω	0Ω	1.5Ω	†80Ω	†48Ω	2.2meg		
V3	12BL6	5.8meg	0Ω	0Ω	1.5Ω	†105Ω	†47Ω	82Ω		
V4	12DL8	6meg	0Ω	†610Ω	1.5Ω	0Ω	†150Ω	3.3meg	0Ω	400K

† MEASURED FROM JUNCTION OF R20 AND R19.
TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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RIVERSIDE MODELS
FJB-6567, M

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC)	ITEM No.	USE	TYPE (RAYTHEON • SYLVANIA)
V1	RF Amplifier	12BL6 (12AF6)*	V3	IF Amplifier	12BL6 (12AF6) *
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12DL8 Note 1.

Note 1. Some Models may use 12AE6 or 12FT6 in this application.
* Alternate Value.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	4247 *	Output	2N257			2N257	PNP

* Some versions may use 1124 or equivalent in this application.
When replacing, apply Silicone grease between transistor and chassis.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: RIVERSIDE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	500	15	20-317	AFH3-00-95	B0040	WP200.6		TVLS-2157 *	①
B	500	15							
C2	750	3	20-757	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097 *	

① Some version may use 500-150mfd in this application (Part #20-315).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#28-800K						
C4	.1 200V	(.047) †	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C5	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C6	3000		BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C7	5 NPO	(12) †	NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C8A								
B	40	#28-4046	NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C								

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	3000		BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	3000		BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C15	27 NPO		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27

Riverside Part Number.
† Alternate Value.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RIVERSIDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg		80A1020A①	F1-68	RTV-689C *			Tone
B	1meg			R2-60		† QJ-1131A		Volume
	600K Tap							
C	Shaft			AK-28				
D	Switch			KR-4				Power Off-On
R2	25Ω	2(WW)	80A1022					Speaker Fader
R3	500Ω	2(WW)	62-501		39-500-100	112-500-100	FL-600S	Bias
	100ΩStop							

① Alternate Part #80A1140.
† "Concentrikit" equivalent: K-8 kit with base elements & shafts: B13-139, P14-121 (Panel)
B19-137X, R1-205 (Rear)
S24 (Bushing)
76-1 (Switch)

* Use Bushing XB-1.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	1500Ω	
R5	150K	
R6	4.7meg	
R7	2.2meg	
R8	47K	
R9	10meg	

ITEM No.	RATING	REMARKS
R10	10meg	Note 1
R11	82Ω	
R12	1.2meg	
R13	47K	
R14	100K	
R15	470K	

ITEM No.	RATING	REMARKS
R16	3.3meg	
R17	560Ω	
R18	22Ω	
R19	1.0Ω 2W	
R20	47Ω	
R21	120Ω	(330Ω) *

Note 1. Not used in some versions. * Alternate Value.

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RIVERSIDE PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, .3-1meg	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RIVERSIDE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil							
L2	RF Coil							
L3	Osc. Coil							
L4	1st IF Trans.	14-265X①	16-6752	16-6752	BC-350	12-H1		
L5	2nd IF Trans.	14-267X①	16-6754	16-6754	BC-354	12-H6		
L6	"A" Lead Choke							

① Some versions may omit letter "X" from Part Number.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	RIVERSIDE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	1.85A	.7Ω	.008 HY	75A601						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RIVERSIDE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5	1	75-459						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RIVERSIDE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	14Ω	3-4Ω	75A966							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RIVERSIDE PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	73-654	57A21	* Rear Speaker (Alternate Part #73-309)
SP2	6"x 9"	PM	3-4Ω	73-916 *	69A3	† Alternate Part Number for SP1
	5"x 7"	PM	3-4Ω	73-656 †	57A15	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RIVERSIDE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V			30707.5 (SFE 7½A 32V)	155009	SFE 7½	HHH

MISCELLANEOUS

ITEM No.	PART NAME	RIVERSIDE PART No.	NOTES
M2	Tuner	78B1017 (or)	Pushbutton Type
	Tuner	78B1028	Pushbutton Type
M3	Spark Plate		

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48A1013	Tuning, Volume
Knob	48A1012	Tone, Dummy

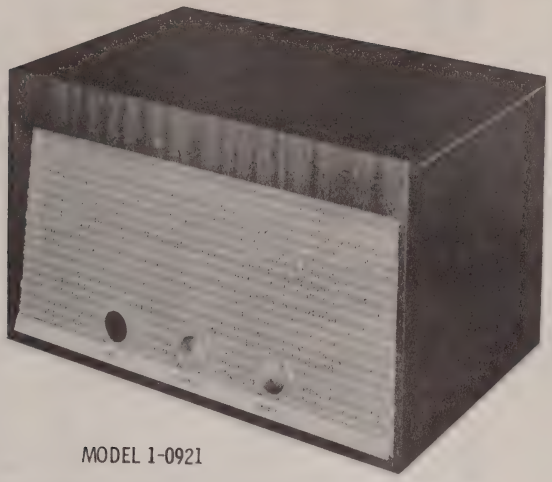
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8061

PHOTOFACT® Folder

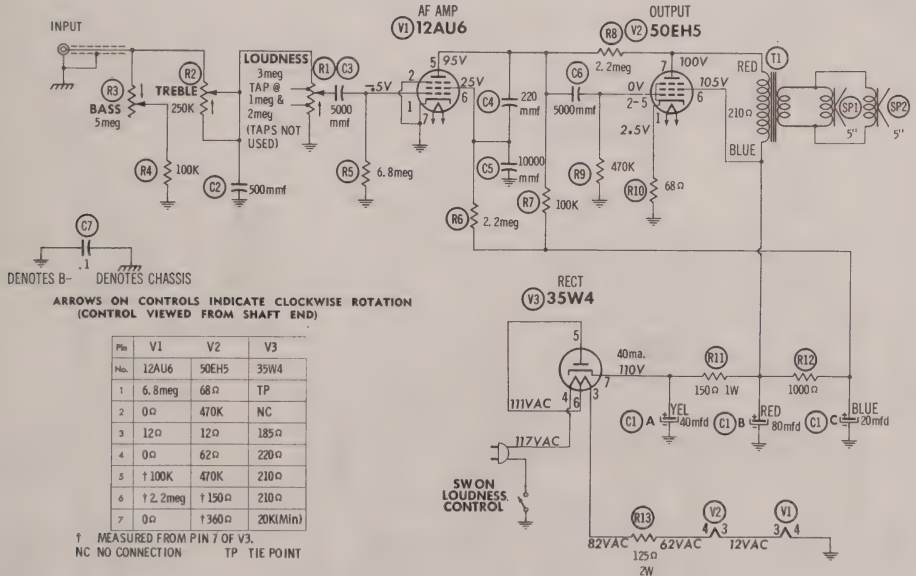
ROLAND MODELS 1-0921, 2-0921

ROLAND MODELS 1-0921, 2-0921



MODEL 1-0921

TRADE NAME	Roland Models 1-0921, 2-0921
MANUFACTURER	Roland Radio Corp., A Div. of Herold Radio & Electronics, 716 S. Columbus Ave., Mount Vernon, N. Y.
TYPE SET	AC-DC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC-DC RATING 23 Watts, .22 Amp. @ 117 Volts AC



ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

Pin No.	V1 12AU6	V2 50EH5	V3 35W4
1	6.8meg	68Ω	TP
2	0Ω	470K	NC
3	12Ω	12Ω	185Ω
4	0Ω	62Ω	220Ω
5	†100K	470K	210Ω
6	†2.2meg	†150Ω	210Ω
7	0Ω	†360Ω	20K(Min)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES

CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA

ITEM No.	USE	TYPE
V1	AF Amplifier	12AU6
V2	Output	50EH5

ITEM No.	USE	TYPE
V3	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PR3-030	BBRT84215	TCT3117	TDLD-11	TVA-3455	
B	80	150					TD-20-150		
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	500		SI 500	D6-501	BYA10T5	CCD-501	B-350	10TS-T50
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C4	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C7	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ROLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg *	½	368026					Loudness
B	Switch							Power Off-On
R2A	250K	½	360265	B-50	A47-250K-S	Q11-130	U46	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	5meg	½	360330	B-88	A47-5meg-S	Q11-141	U65	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps @ 1meg and 2 meg (Not used).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100K	
R5	6.8meg	
R6	2.2meg	
R7	100K	

ITEM No.	RATING	REMARKS
R8	2.2meg	
R9	470K	
R10	68Ω	
R11	150Ω 1W	

ITEM No.	RATING	REMARKS
R12	1000Ω	
R13	125Ω 2W	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ROLAND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4400Ω	3-4Ω	430211	24S51	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	405005	5A1	
SP2	5"	PM	3-4Ω	405005	5A1	

CABINETS & CABINET PARTS

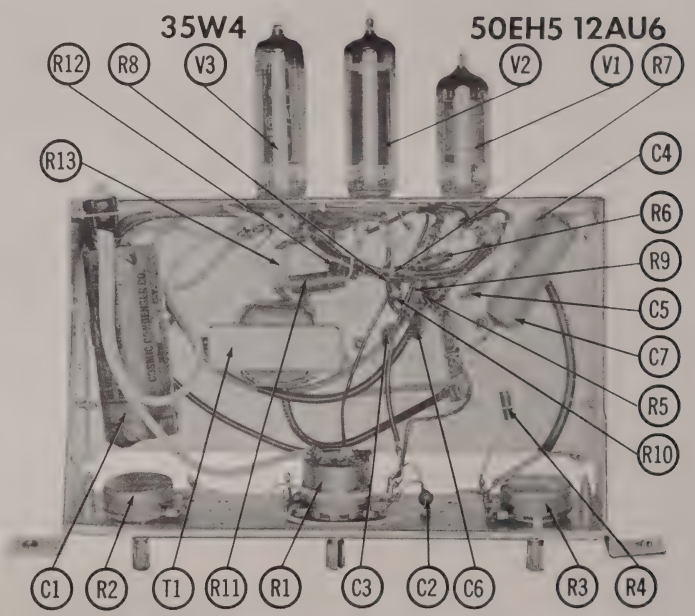
(When Ordering Cabinets & Cabinet Parts, Specify Model, Color)

NAME	PART NO.	DESCRIPTION
Knob	272209	Bass, Treble, Loudness
Cabinet	211190	Mahogany
Cabinet	211191	Blond
Cabinet	211192	Walnut

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



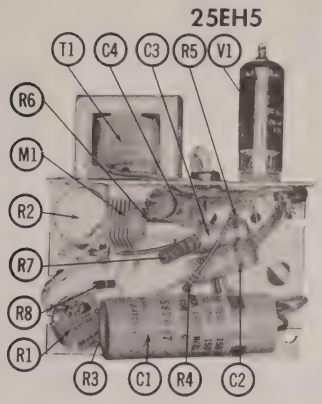
CHASSIS—BOTTOM VIEW

PHOTOFACT® Folder

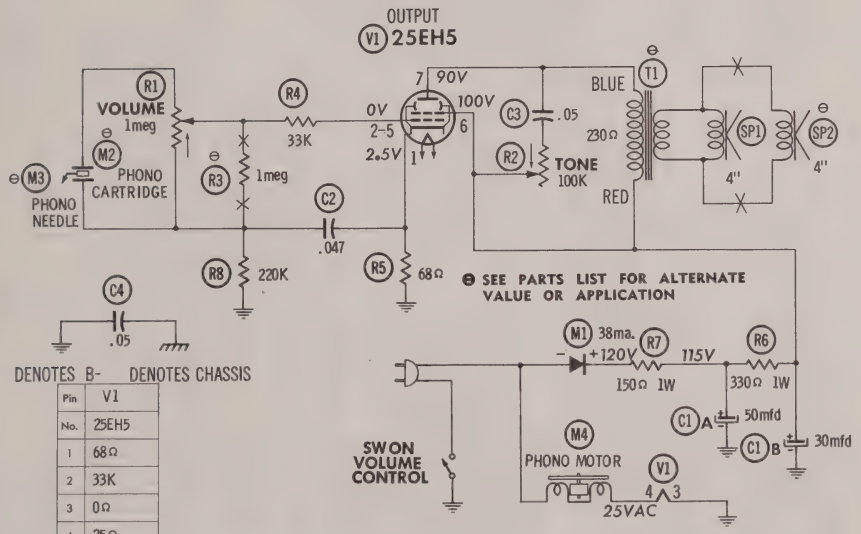
STEELMAN MODELS 2-1132, 2-1142

STEELMAN MODELS
2-1132, 2-1142

MODEL 2-1142



TRADE NAME	Steelman Models 2-1132, 2-1142
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 42 Watts, .38 Amp. @ 117 Volts AC (Less Motor)



Pin No.	V1 25EH5
1	68Ω
2	33K
3	0Ω
4	25Ω
5	33K
6	†480Ω
7	†710Ω

† MEASURED FROM OUTPUT OF M1.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	582007	PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C3	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	360081	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	100K	½	360050	B-41	A47-100K-Z	Q13-128	U39	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1meg	Note 1
R4	33K	

ITEM No.	RATING	REMARKS
R5	68Ω	
R6	330Ω 1W	

ITEM No.	RATING	REMARKS
R7	150Ω 1W	
R8	220K	

Note 1. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3000Ω	1-2Ω	430573 ①	24S05				24S05		

① Model 2-1142. Model 2-1132 uses Part #430572 (3-4Ω Secondary).

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	STEELMAN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	404003	4A07	* Alternate Part Number.
SP2	4"	PM	3-4Ω	404003	4A07	(One Speaker Used In Model 2-1132)
	4"	PM	3-4Ω	404010 *		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	STEELMAN PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.038A	380001 *	T065 *	1234AH *	65A *	SR200 ♦	* Selenium Type ♦ Silicon Type

PHONO CARTRIDGE

ITEM No.	STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	323014 ① 323010 ②	124-TS	N8-1 & N8-3			#1	CRA-55 and CRA-55LP	2T-S	N-2T-S

① Model 2-1142. ② Model 2-1132.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	STEELMAN PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	323016 ① (LP)	W-64MGS † or W-64MGD ♦	CRA-55LP † or CRA-55LPD ♦	† Jewel ♦ Diamond
	323015 ① (78 RPM)	W-64S † or W-64D ♦	CRA-55 † or CRA-55D ♦	
	323011 ② (78 RPM) 323012 ② (LP)			

① Model 2-1142.
② Model 2-1132.

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M4	Motor	311042	4 Speed Models 2-1142, 2-1132
	Tone Arm	323017	Model 2-1142
	Tone Arm	323007	Model 2-1132
	Idler Wheel		Walsco Part #1490-01

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	271303	White, Volume, Tone
Knob	272286	Loudness, Model 2-1132
Knob	272285	Tone, Model 2-1132
Cabinet	200051	Tan, Model 2-1142
Cabinet	200052	White, Model 2-1142
Cabinet	200053	Black, Model 2-1142
Cabinet	240920	Red & White, Model 2-1132
Cabinet	240930	Green & White, Model 2-1132

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

UHER MODEL
Universal

UHER MODEL
Universal

UHER MODEL
Universal

GENERAL INFORMATION

The Uher Universal is a three speed tape recorder.

The Uher is designed to record and play back two tracks of material on standard-width recording tape. This doubles the recording and playing time. Recordings can be made from a phonograph, radio, or television receiver as well as those made directly from the microphone.

The three speeds are 3 3/4 ips, 1 7/8 ips, and 15/16 ips. Using both tracks, the recording and playing times are as follows:

15/16 ips	4 hours per track
1 7/8 ips	2 hours per track
3 3/4 ips	1 hour per track

The Uher is designed to operate on 110, 125, 160, 220 or 240 volts AC, 50 or 60 cycles.

Supplied by:

Kimberly International, Ltd.
Suite 207
1650 Broadway
New York 19, New York

SET 499 FOLDER 16

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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CQ431

PREPARING FOR OPERATION

1. Remove the lid from the carrying case.
2. Remove the AC cord and microphone from the storage compartment in the carrying case lid.
3. Remove the empty reel from its storage compartment.
4. Connect the AC cord to the receptacle on the rear of the recorder.
5. Plug the AC cord into a convenient AC outlet of proper rating.

FUNCTION OF CONTROLS

On-Off and Speed Selector

Turning this control clockwise turns the power on to the recorder. Turning it counterclockwise turns the power off.

To change speeds, the control must be in the off position. With the control at the bottom position, it is set for 3 3/4 ips (9.53 cms. p.s.); at the center position, it is set for 1 7/8 ips (4.75 cms. p.s.); and at the top position, it is set for 15/16 ips. (2.4 cms. p.s.).

Volume and Speech - Music Switch

Rotate control clockwise to increase the volume and counterclockwise to decrease the volume. When making a recording or playing a tape with speech on it only, pull the control up. When making a recording or playing a tape with music on it only, push the control down.

Stop

Depressing this button will release any other key that has been depressed and the tape will stop.

Rewind

When this key is depressed, the tape will rewind at a fast rate of speed from right to left.

Start and Playback

Depressing this key will start the tape moving for playback.

Fast Forward

Depressing this key will advance the tape from left to right at a rapid rate of speed.

Recording

To make a recording, depress the Start and Playback key and the Recording key simultaneously.

Automatic Playback

Depress the Automatic Playback key and the Start and Playback key simultaneously. When the recording has played through, it will automatically rewind and replay.

Pause Button

When this button is depressed, the tape will remain stationary until it is released.

Input Selector

The Selector is rotated to the position that corresponds to the type of input being used; such as microphone, radio, or phono.

Recording Level

Turn the control slowly clockwise until the ends of the luminous band of the indicator are within 3/64" of one another during the loudest part of a recording. Pull the control knob up and the automatic modulation is in operation. Only use this feature when recording conferences, conversation, or dictation. The modulation indicator is inoperative when the automatic feature is used.

Index Counter

When starting a new recording, set the index counter to zero. Logging the tape at different points makes it easy to find any given part of the recording.

OPERATING INSTRUCTIONS

Speed Selector

To select the desired speed, turn the On-Off switch to the off position. Pull the knob up to the top position for 15/16 ips (2.4 cms. p.s.), to the middle position for 1 7/8 ips (4.75 cms. p.s.), and to the down position for 3 3/4 ips (9.53 cms. p.s.).

CAUTION: Do not attempt to operate this control with the recorder on. Make sure the control is in the off position (counterclockwise).

Threading Tape

1. Place a reel of tape on the left-hand turntable and an empty reel on the right-hand turntable.
2. Unwind about 12" of tape from the supply reel and hold a section of it taut and insert it into

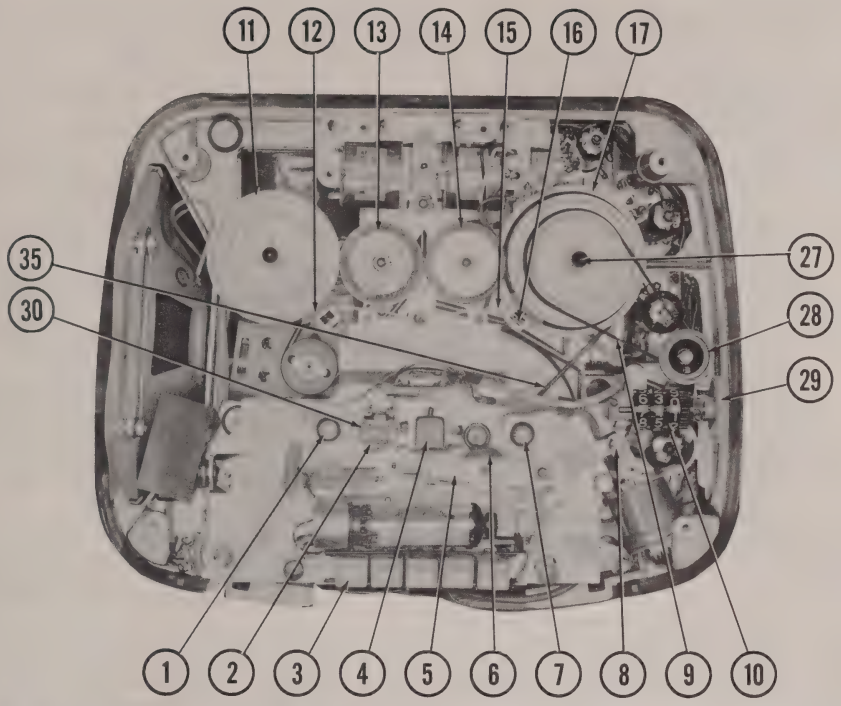


FIG.1 TOP VIEW OF MECHANISM WITH DRESS PLATE REMOVED

the tape guides, making certain the dull coated side faces the rear of the recorder.

3. Insert the free end of the tape into one of the three radial slots in the hub of the take-up reel. Turn the reel several turns counterclockwise to secure the tape to the take-up reel and to take up all slack between reels.

To Record from Microphone (Mikrofon)

1. Adjust the speed selector to the desired speed.
2. Thread tape, see "Threading the Tape".
3. Turn the unit on and allow sufficient time for the tubes to warm up.
4. Connect the microphone to the Microphone-Remote Control socket.
5. Turn input selector to microphone.
6. Depress the Recording key and adjust the modulation control clockwise until the loudest sound causes the luminous bands of the indicator to come within 3/64 inch of one another.
7. Depress the Stop button.
8. Depress the Start-Playback key and the Recording key simultaneously to start the recording.
9. Depress the Stop button when the recording is completed. The keys will be released from their catches and the tape will stop.

Dual Track Recording

Two full length recordings can be recorded on one reel of tape, one on each half of the dull side of the tape. After one track has been recorded, a second recording can be made on the same tape by removing the full reel from the right-hand turntable, turning the reel over and placing it on the left-hand turntable.

To Play a Recording

1. Thread the tape as described under "Threading the Tape".
2. Set the speed selector to the speed at which the tape was recorded.
3. Turn recorder on, and allow sufficient time for the tubes to warm up.
4. Pull the volume control knob up if the recording is speech and push down if the recording is music.

5. Adjust the volume control to the desired listening level.

To Use an Earphone or External Speaker

An earphone or external speaker may be inserted into the loud-speaker jack. The earphone can be used for dictation. An external speaker with an impedance of 4 to 6 ohms can be used when better sound quality is desired. When either of these are connected to the loud-speaker jack, the built-in speaker is disconnected.

Connecting to an Amplifier System

The recorder may be connected to an amplifier system by connecting the output cable from the Radio-Phono jack of the recorder to the Phono input jack of the amplifier.

Erase

Previous recordings are automatically erased when a new one is made. If a tape is to be erased without putting a new recording on the tape, it may be done in one of two ways:

1. Thread the tape, turn the modulation control fully counterclockwise and depress the Start-Playback and Record buttons and the tape will be erased.

2. With the tape wound onto the take-up reel, depress the Rewind and Record buttons. There will be a whistle tone imposed onto the tape which will be removed when a new recording is made.

Automatic Repeat Playback

1. Wrap a piece of foil around the tape about one foot from each end.

2. Depress the Start and Playback and the Automatic Playback keys.

3. When the tape has finished playing, it will automatically change over to fast rewind. When the tape is rewound onto the left reel, it will automatically begin playing the tape over.

Recording Duplication

To duplicate a recording, proceed as follows:

1. Connect a cable between the output jack of the playback recorder and the Radio-Phono jack of the receiving recorder.

2. Set the playback recorder for playback and the receiving recorder for Phono recording.

3. Adjust the volume control of the playback recorder to a normal level.

4. Adjust the modulation control of the receiving recorder so the bands of the modulation indicator come within 3/64" of one another.

Dictation

By means of a special dictation microphone, the recorder can be controlled without touching any of the control keys. To use the special dictation microphone, proceed as follows:

1. Connect the special microphone to the Microphone Remote control jack.

2. Set the selector switch to microphone recording.

3. Turn the modulation control on.

4. Pull the Recording Level control up and turn clockwise to its halfway position.

5. Adjust the volume control to its mid position.

6. Slide the microphone slider as far as it will go toward the window and the tape will start moving.

7. Hold the microphone about a foot from your mouth and talk in a normal manner.

NOTE: When using the automatic modulation control, the modulation indicator will not show the actual operating conditions.

8. To make a pause, slide the slider to its Stop position.

9. To check the last few words of the recording, slide the microphone slider down to the arrow that points to the left. When the slider is released, the recording will be played back.

10. To make a correction, slide the slider down to the rewind position to rewind the tape. After a few inches of the tape has been rewound, release the slider and the tape will play back. When the tape has played back to where the tape is to be changed, slide the slider to the record position.

11. Slide the slider to the stop position when the recording is completed.

To Record from a Radio or Television Receiver

Recordings from a radio may be made by one of the following methods:

1. Through the microphone by pickup from the radio speaker. — Place the microphone about 6" to 12" in front of the radio speaker. Turn the radio volume control to a normal level. Setting it too high will cause distortion. Turn the radio tone control to treble or high. Set the recording level and record as described under "To Record from a Microphone".

2. Through a direct connection to the Radio speaker. — Make up a shielded cable with alligator clips on one end and a plug on the other. Connect the alligator clips across the voice-coil terminals of the radio speaker and insert the plug into the Radio-Phono jack. Set the selector switch to Radio. Set the radio volume and tone controls as described previously. Set the recording level and proceed as described under "To Record From Microphone".

3. Through a direct connection to the volume control of the radio. — Make up a shielded cable with a plug on one end. Connect the other end across the radio volume control. Insert the plug into the Radio-Phono jack. Set the selector

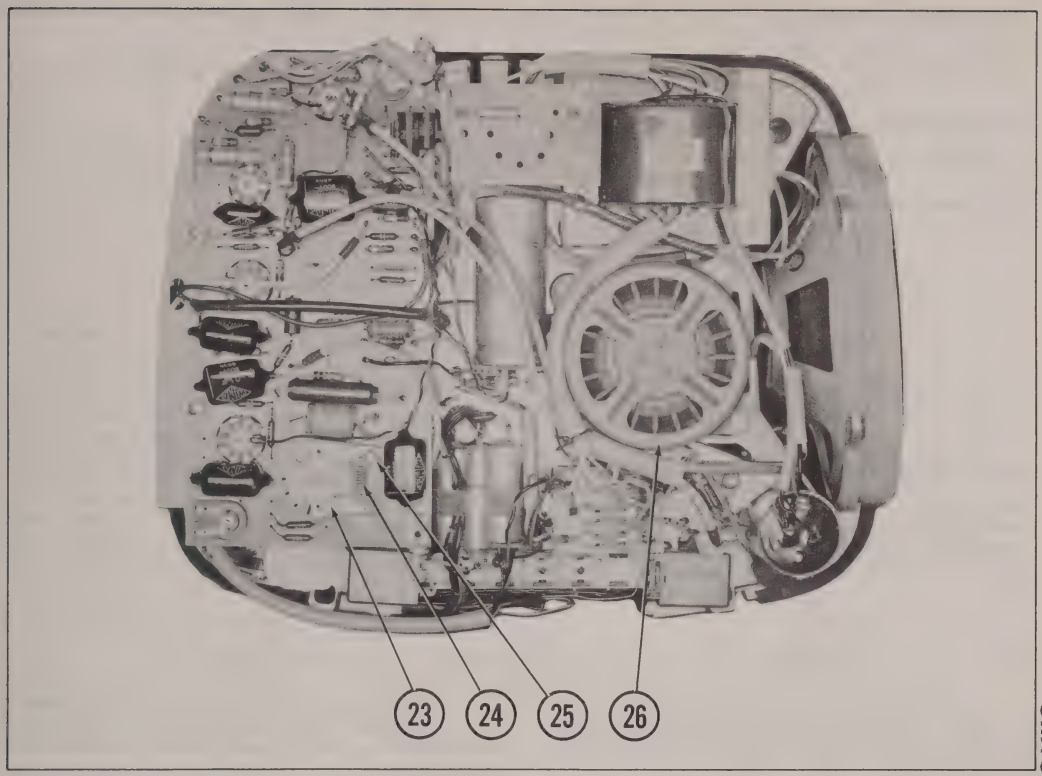


FIG.2 BOTTOM VIEW OF MECHANISM

switch to Radio. Set the recording level and proceed as described under "To Record From Microphone". The radio volume and tone controls do not affect this setup; therefore, they require no adjusting.

To Record from a Record Player

Connect the record player to the Radio-Phono jack. Turn the record player on and lower the pickup onto the record. Set the selector switch to Phono. Set the modulation control until the luminous bands of the indicator come within 3/4" of one another during the loudest part of the record. Return the pickup to the beginning of the record and start the recording by depressing the Start and Playback and Record buttons simultaneously.

Trick Key

1. Insert the trick key into the tape guide slot where the letter "I" of the name Universal is located.
2. Thread the tape onto the recorder.
3. Connect the fade-in signal source, such as a radio, microphone, or record player.
4. Switch the input selector to the type of source being used.
5. Turn the recorder on and depress the playback button.
6. Adjust the volume.
7. Fade the signal source in when the tape reaches the desired spot.

DISASSEMBLY

To Remove Recorder from Case

1. Remove the four control knobs.
2. Remove four screws from the escutcheon.
3. Remove two screws from front of case holding the recorder.

4. Lift recorder from case.

5. To reassemble, reverse the foregoing procedure.

To Unlock Printed Board for Repair

1. Remove EL95 tube (V4).

2. Remove two mounting screws.

3. Turn tube shield on EF86 (V1) to clear main chassis.

4. Set recorder on side with AC interlock down.

5. Pull printed board out.

6. To reassemble, relocate record relay shaft so it will fit into the hole in the slider switch.

ADJUSTMENTS

Record-Playback Head

Thread a prerecorded tape onto the recorder and adjust the fixing screw until maximum output is obtained.

BIAS ADJUSTMENT

Turn Recording level control fully counterclockwise. Connect a 100 ohm carbon resistor in series with the recording head. Connect a VTVM across the resistor and adjust the Bias Adjust control for 1 volt ± 5% drop across the 100 ohm resistor. Remove the resistor.

RECORDING LEVEL INDICATOR ADJUSTMENT

Apply a 100 cycle signal from a signal generator at a 10 millivolts level across terminals 1 and 2 of the Radio/ Phono input jack. Connect the VTVM (in parallel with a 10,000 ohm resistor) across terminals 2 and 3 of the External Speaker/ Earphone output jack. Turn the Recording Level control until the meter reads 1.1 volt. Adjust the Recording Level Indicator Adjust control until the indicator tube shows full level.

CLEANING

The pressure roller (6), tape guides (1) and (7), and play-record head (4) may accumulate tape residue as the tape passes over these parts. Use a soft cloth soaked in alcohol to clean these parts.

LUBRICATION

This recorder has self oiling bearings; therefore lubrication is not required for long periods of time unless a part has been removed for repair or replacement.

TROUBLE CHART

Symptom	Cause	Remedy
No Record or Playback.	1. Defective head (4). 2. Relay stuck (M16). 3. Relay stuck (M17).	1. Replace head. 2. Replace relay (M16). 3. Replace relay (M17).
Input selector switch does not function properly.	1. Draw spring (24) broken or disconnected.	1. Connect or replace draw spring (24).
No Fast Forward and/ or no Fast rewind.	1. Forward and rewind belt broken or off. 2. Forward relay (M18) defective. 3. Rewind relay (M19) defective. 4. Bad fuse (M5).	1. Replace belt. 2. Replace relay. 3. Replace relay. 4. Replace fuse (M5).
Sluggish rewind or sluggish forward.	1. Relay (M18 or M19) not bottoming properly, or incorrectly aligned.	1. Position relay to bottom completely, or align completely.
Counter not operating.	1. Counter drive belt (9) out or off.	1. Connect or replace counter drive belt (9).
Slowing down of recording and playback.	1. Oil from motor on flywheels.	1. Clean off excess oil from flywheels, and motor bushing.
Level indicator fading, intermittently.	1. Filament pin open, or cold solder joint.	1. Resolder connection.
Automatic playback not operating.	1. Pins 2 and 3 open on auto play switch. 2. Switch defective.	1. Resolder connections. 2. Replace switch.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Level indicator does not light.	1. Bad fuse (M4). 2. Bad tube (V5).	1. Replace fuse (M4). 2. Replace tube (V5).
Start playback and record ACTION intermittent.	1. Relay (M16) too far away from arm, causing bad bottoming action.	1. Adjust relay to bottom properly.
Bad braking action.	1. Brake spring disconnected. 2. Brake shoe worn. 3. Brake arm bent.	1. Locate spring in holder for correct tension. 2. Replace with new cork shoe. 3. Bend arm by increasing angle; thereby, increasing braking action.
Pressure Roller force too great or too little.	1. Eccentric screw (8) needs adjustment.	1. Adjust eccentric screw so that a pull of approximately 500 gms is exerted on tape. Use spring balance connected to short length of tape with loop on end. Push start playback button. Never pull spring away from tape. Hold spring in position and adjust screw for tension.
Take up reel does not turn.	1. Belt (35) stretched.	1. Replace belt.
Takeup slow or will not take up.	1. Belt (35) slippery.	1. Clean with alcohol.
Automatic playback button will not come up.	1. Spring underneath pushbutton.	1. Increase tension of spring.
Motor will not run.	1. Voltage selector. 2. Bad fuse (M6).	1. Adjust voltage selector for 110 volts. 2. Replace fuse.
Flywheel runs slow.	1. Take-up reel belt (35) is stretched. 2. Take-up reel slippery.	1. Replace belt. 2. Clean with alcohol.
Speed selector does not fall into proper speed position.	1. Pin of speed switch not engaging with speed slot.	1. Adjust pin on selector switch.
Speed varies at end of tape.	1. Stretched take-up belt (35). 2. Slippery take-up belt (35).	1. Replace belt. 2. Clean with alcohol.
Hum noise near motor assembly.	1. Fast speeds belt (19) loose.	1. Adjust motor for more tension, or replace belt.
No record or playback.	1. Bad EBF80.	1. Replace.
Playback too low.	1. B+ Voltage too low.	1. Check B+ circuit components for shorts. Replace defective components.
High clicks or pops on playback.	1. Open head winding.	1. Replace head.
Bad hiss on playback.	1. Bad EF86.	1. Replace.
Akustomat does not operate.	1. Pin No. 2 on plug shorted to ground.	1. Rewire or remove short.
No recording.	1. Switch on printed circuit to record head stuck.	1. Release switch on printed board operated by relay.
Hum when record button is pressed.	1. Switch not grounded. 2. Dirty heads.	1. Check to see if switch is grounded. 2. Clean heads.

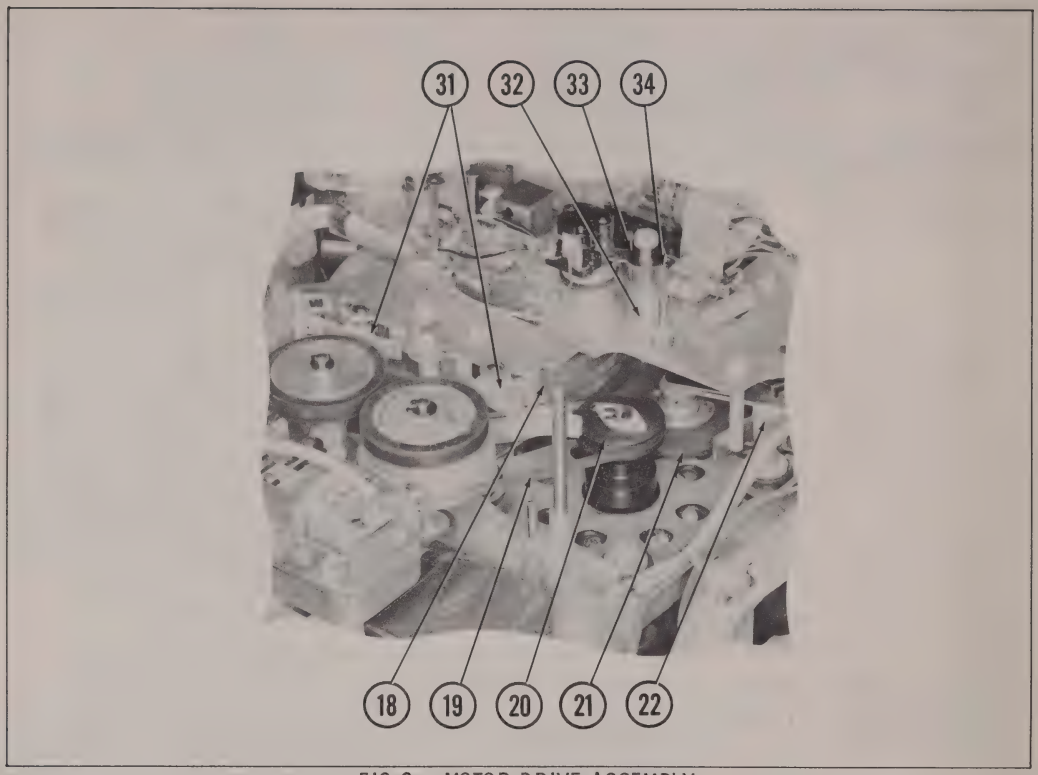
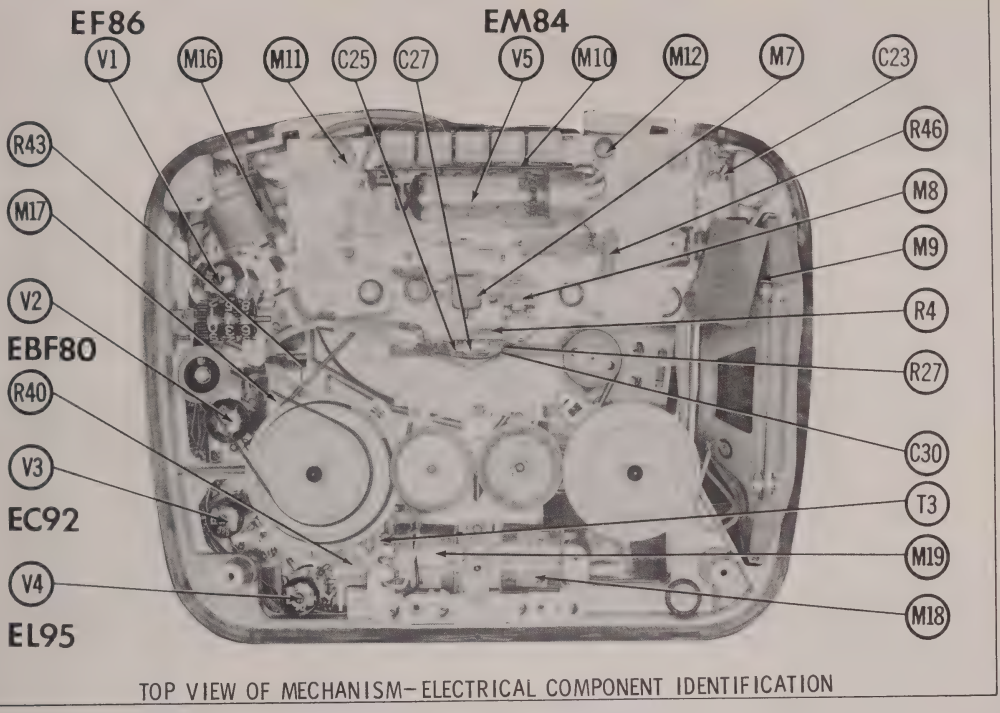


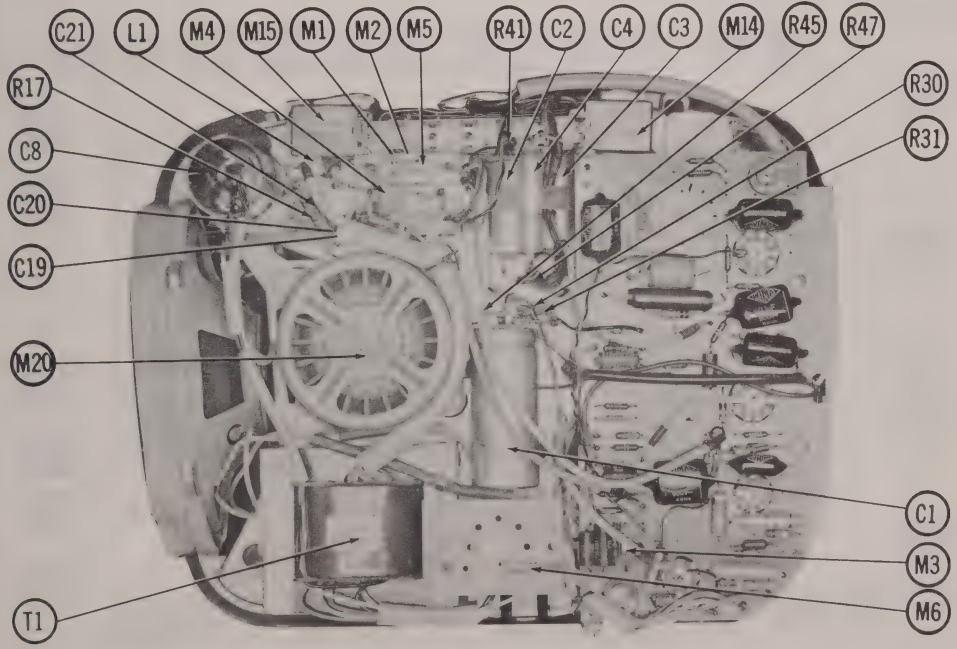
FIG.3 MOTOR DRIVE ASSEMBLY

MECHANICAL PARTS LIST

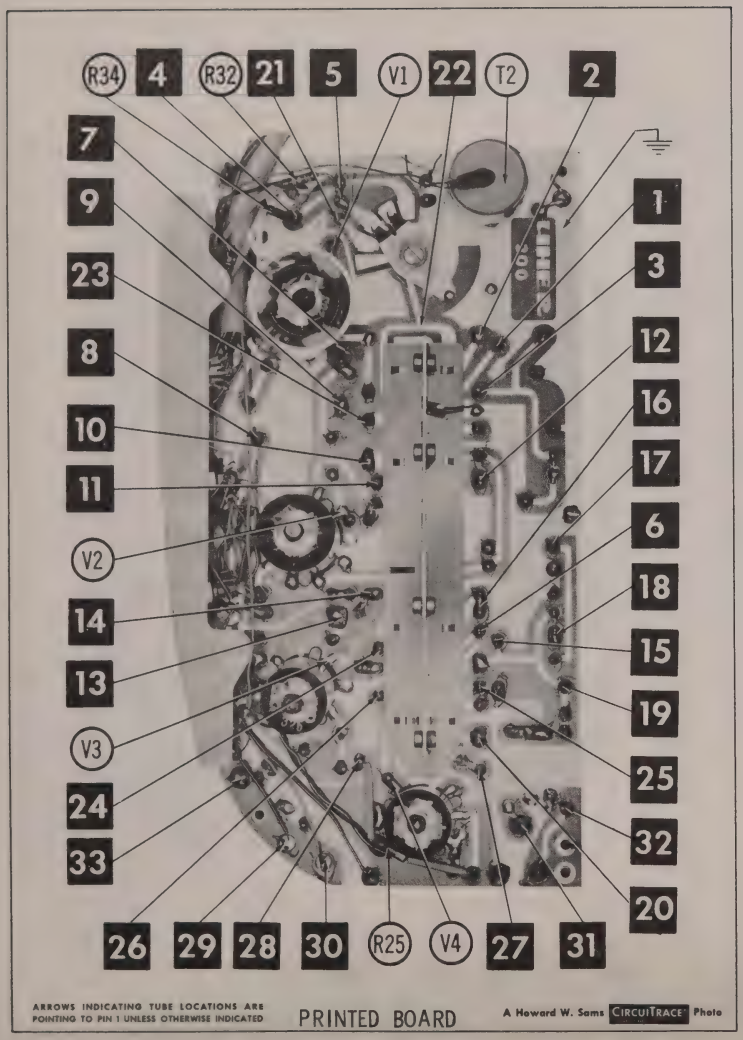
Ref. No.	Part No.	Description
1	30122	Left Tape Guide
2	30110	Erase Head
3	30202	Key
4	30114	Play-Record Head
5	30130	Pressing Lever Complete
6	30131	Pressure Roller
7	30121	Right Tape Guide
8	30135	Eccentric
9	30031	Counter Drive Belt
10	30029	Counter
11	30015	Upper Clutch Half
12	30108	Brake Shoe
13	30019	Left Friction Wheel
14	30021	Right Friction Wheel
15	30105	Brake Lever
16	30106	Brake Spring
17	30017	Belt Pulley For Right Hand Clutch
18	30010	Flywheel And Capstan Ass'y.
19	30020	Driving Belt For Friction Wheel Left Hand
20	30002	Motor Pulley 50 Cycle
	30003	Motor Pulley 60 Cycle
21	30004	Friction Wheel For Tape Speed Selector
22	30005	Bracket For Friction Wheel
23	30911	Stop Lever
24	30912	Draw Spring
25		"C" Washer
26	30001	Motor
27	30014	Cap For Upper Clutch Wheel Axle
28		Counter Pulley
29	30030	Counter Knob
30	30109	Mounting System For Erasing Head
31	30106	Left Brake Lever Spring
	30107	Right Brake Lever Spring
32	30123	Tape Guide Spacer
33	30122A	Plastic Upper Part of Tape Guide
34	30124	Contact Pin
35	30018	Right Hand Clutch Drive Belt



TOP VIEW OF MECHANISM–ELECTRICAL COMPONENT IDENTIFICATION



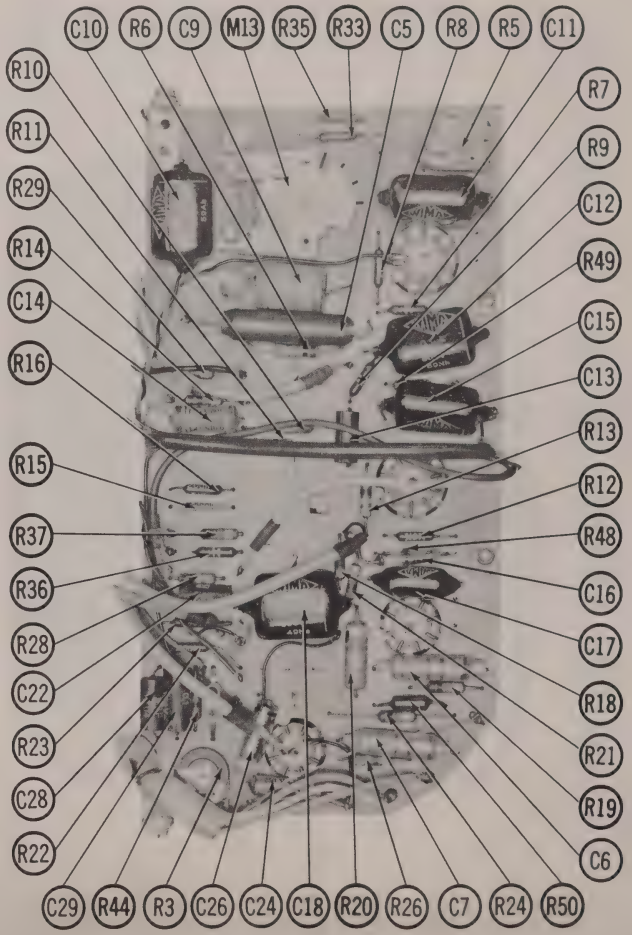
BOTTOM VIEW OF MECHANISM—ELECTRICAL COMPONENT IDENTIFICATION



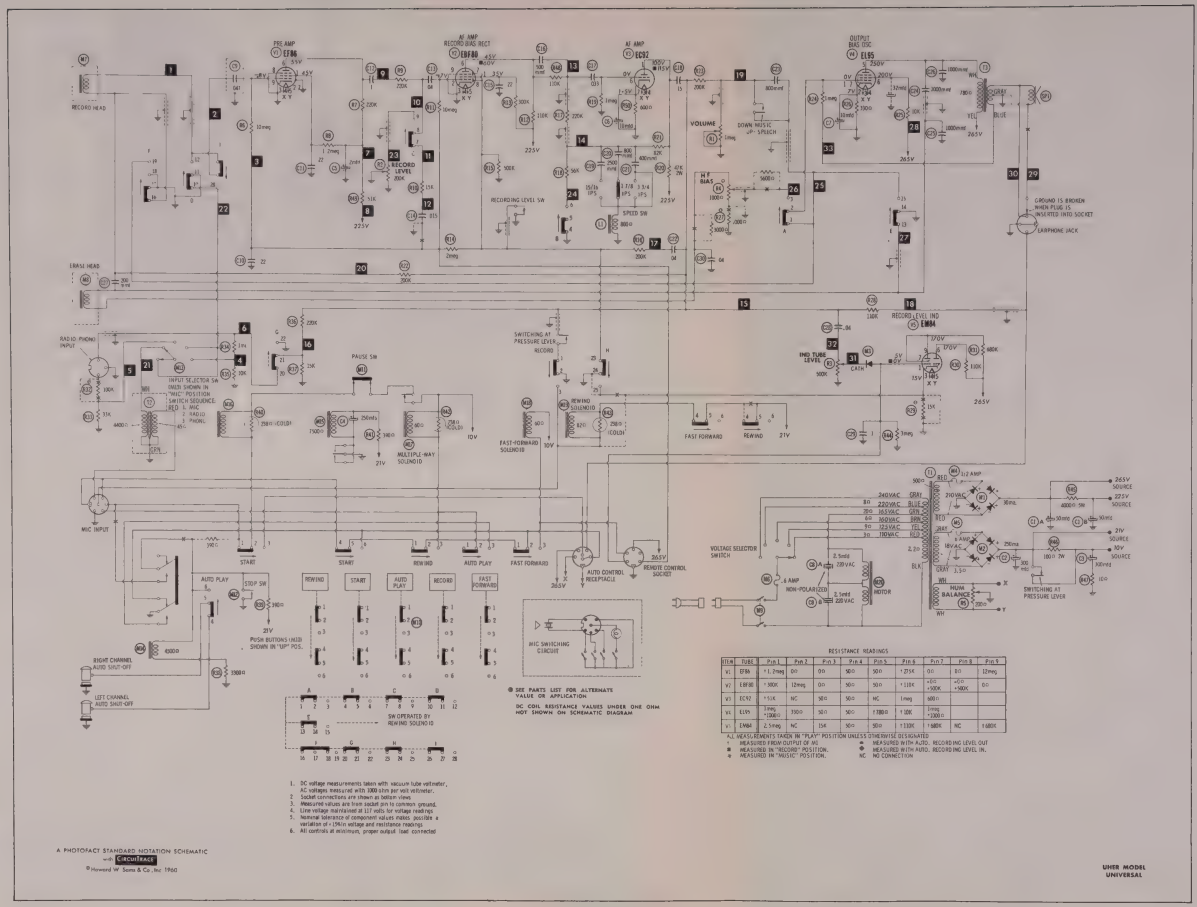
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PRINTED BOARD

A Howard W. Sams CIRCUITRACE Photo



PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86	1.7meg	0Ω	0Ω	560Ω	560Ω	1.25K	0Ω	1Ω	12meg
V2	EBF80	580K	12meg	0Ω	360Ω	360Ω	110K	+0Ω −500K	+0Ω −500K	0Ω
V3	ECH3	110K	NC	360Ω	360Ω	NC	1meg	680Ω		
V4	EL95	1meg +1000Ω	350Ω	360Ω	360Ω	180Ω	10K	1meg +2200Ω		
V5	EM84	2.5meg	NC	15K	90Ω	90Ω	110K	160K	NC	160K

A.C. MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED FROM OUTPUT OF A6
■ MEASURED IN "RECORD" POSITION.
◆ MEASURED IN "MUSIC" POSITION.
◆ MEASURED WITH AUTO. RECORD ING LEVEL OUT
● MEASURED WITH AUTO. RECORD ING LEVEL IN.
NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage has varied at 117 volts for voltage readings.
5. Tolerance for most of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC

CIRCUITFACT

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UNER MODEL UNIVERSAL

AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Preamplifier	EF86	V3	AF Amplifier	EC92
V2	AF Amp. -Record Bias Rect.	EBF80	V4	Output - Bias Osc.	EL95
			V5	Record Level Indicator	EM84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	UHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	350	30503	AFH2-40	B0320	FP148	TMD-39	TVL-2630	
B	50	350				TC79			
C2	300	30	30506	PRS1380	BR2505	TC50025	TD-250-50	TVA-1208	
C3	300	30	30506	PRS1380	BR2505	TC50025	TD-250-50	TVA-1208	
C4	250	12	30507	PRS1160	BR2501	TC50025	TD-250-15	TVA-1131	
C5	2	350	30505	PRS1705	BR245	TC595	TD-2-450	TVA-1701	
C6	10	12	30508	XPP-12010	NLW10-15	TT12X10	ML10-15	TE-1128	
C7	10	12	30508	XPP-12010	NLW10-15	TT12X10	ML10-15	TE-1128	
C8A	2.5	220AC	30501						
B	2.5	220AC							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	.047 250V	#30509						
C10	.22 250V		P488N-22		CUB4P22	4DP-4-224	GEM-4022	4TM-P22
C11	.22 250V		P488N-22		CUB4P22	4DP-4-224	GEM-4022	4TM-P22
C12	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C13	.04 250V		P488N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C14	.015 250V		P488N-015	DD16-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C15	.22 250V		P488N-22		CUB4P22	4DP-4-224	GEM-4022	4TM-P22
C16	500		SI 500	D6-501	L10T5	CCD-501	GP350	10TS-T5
C17	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C18	.15 500V		P688N-15		CUB6P15	6DP-5-154	GEM-6015	6TM-P15
C19	2500		SI 2500	D6-252	BYA10D25	CCD-252	GP225	10TS-D25
C20	800		SI 820	D6-821	L10T8	CCD-801	GP382	10TS-T8
C21	400		SI 390	D6-401	L10T4	CCD-401	GP340	10TS-T4
C22	.04 250V		P488N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C23	800		SI 820	D6-821	L10T8	CCD-801	GP382	10TS-T8
C24	1000		SI 1000	D6-102	BYA10D1	CCD-102	GP210	5HK-D10
C25	1000		SI 1000	D6-102	BYA10D1	CCD-102	GP210	5HK-D10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C26	1000		SI 1000	D6-102	BYA10D1	CCD-102	GP210	5HK-D10
C27	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C28	.04 250V		P488N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C29	.1 250V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C30	.04 150V		P288N-04	D6-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4

Uher Part Number (Shielded Unit).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	UHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2	30702					Volume
B	Switch							Push-Pull Music-Speech
R2A	200K	1/2	30701					Record Level
B	Switch							Push-Pull Auto Record Level
R3	500K	1/2	30704					Indicator Tube Level Set
R4	1000Ω	1/2	30703					H.F. Bias, Note 1
R5	200Ω	1/2	30705					Hum Balance

Note 1. Some versions may use 2000Ω in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	10meg	
R7	220K	
R8	1, 2meg	
R9	220K	
R10	15K	
R11	10meg	
R12	110K	
R13	300K	
R14	2meg	
R15	500K	
R16	200K	
R17	220K	
R18	56K	
R19	1meg	
R20	47K 2W	

ITEM No.	RATING	REMARKS
R21	82K	
R22	200K	
R23	200K	
R24	1meg	
R25	10K	
R26	330Ω	
R27	1000Ω	Note 1
R28	110K	
R29	15K	
R30	110K	
R31	680K	
R32	100K	Note 1
R33	33K	
R34	1meg	
R35	10K	

ITEM No.	RATING	REMARKS
R36	220K	
R37	15K	
R38	3300Ω	
R39	390Ω	
R40	238Ω (cold)	
R41	390Ω	
R42	238Ω (cold)	
R43	238Ω (cold)	
R44	3meg	
R45	4000Ω 5W	
R46	100Ω 2W	
R47	10Ω	
R48	110K	
R49	51K	
R50	600Ω	

Note 1. Not used in some versions.

AMP PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: UHER PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	RF Choke							

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: UHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	240V, 220V 165V, 160V 125V, 110V (117V @ .4A (125V Tap))	210V @ 030A	6.3V @ 2.1A	30801						
	SEC. 3	SEC. 4	SEC. 5							
	18V @ .250A									

TRANSFORMER (INPUT)

ITEM No.	TURNS RATIO: PRI.	SEC.	REPLACEMENT DATA: UHER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	1	10	30803						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: UHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	15K	3-4Ω	30802							
		SEC. 2								
		1200Ω								

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: UHER PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	3-4Ω	30301		

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: UHER PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.030A	30401 * (B250C75)					* Selenium
M2	.250A	30402 * (B30C600)					
M3		30403 * (E25C2)					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: UHER PART No. FUSE	UHER PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M4		1½A 250V		30305 ①			GMA-1½	
M5		.6A 250V					GMA-6	
M6		.6A 250V		303007			GMA-6	

① Fuse holder complete, for M4 & M5.

MISCELLANEOUS

ITEM No.	PART NAME	UHER PART No.	NOTES
M7	Head	30114	Playback, Record
M8	Head	30110	Erase
M9	Switch	30137	Power Off-On
M10	Switch	30201	Key Board Assembly Includes Rewind, Start, Auto Play, Record & Fast Rewind
M11	Switch	30203	Pause
M12	Switch	30204	Stop
M13	Switch	30910	Input Selector, Less Stop Lever Part #30911
M14	Relay	30601	Relay I (BV65021/ 71D)
M15	Relay	30602	Relay II (BV65021/ 71D)
M16	Solenoid	30603	Pressure Roller Assembly (BV2202)
M17	Solenoid	30604	Multiple-Way Switch (BV2202)
M18	Solenoid	30605	Fast Forward (BV2202)
M19	Solenoid	30607	Rewind (BV2203)
	Printed Board	30303	With Switch Unit (Equalizer Network)
M20	Motor	30001	Drive
	Printed Board	30401	For Amplifier, Includes Connector Plate Part #30902

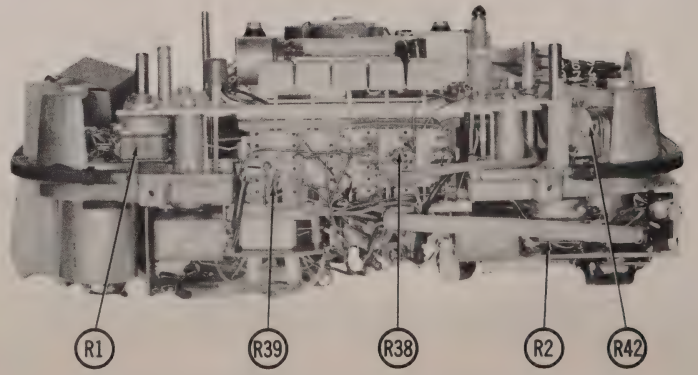
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	30030	Tape Footage Counter
Knob	31013	Speed Selector
Knob	31012	Off-On, Volume, Input Selector
Knob	31015	Pause
Knob	31016	Stop

WIRING DATA

General-use Unshielded Hook-up Wire ..... **Use BELDEN No. 8530 (Solid) Available in Ten Colors**
8524 (Stranded) Available in Ten Colors
Power Cord ..... **Use BELDEN No. 1765-B (6 Ft. Length)**
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... **Use BELDEN No. 8401**
Phono Pick-up Arm Cable ..... **Use BELDEN No. 8430 (Two Conductor - Twisted)**



SIDE VIEW OF MECHANISM—ELECTRICAL COMPONENT IDENTIFICATION

PHOTOFACT® Folder

**V-M MODELS
812, 912**

V-M MODELS
812, 912

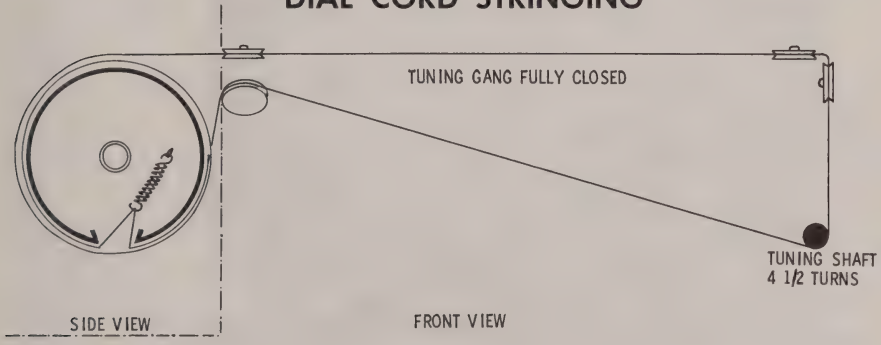
MODEL 912

V-M MODELS
812, 912

TRADE NAME	V-M Models 812, 912
MANUFACTURER	V-M Corp., 375 W. Main Street, Benton Harbor, Michigan
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 2 Tube Stereo Preamplifier, 7 Tube Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 150 Watts, 1.3 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	540 — 1600KC FREQ. MOD. 88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING

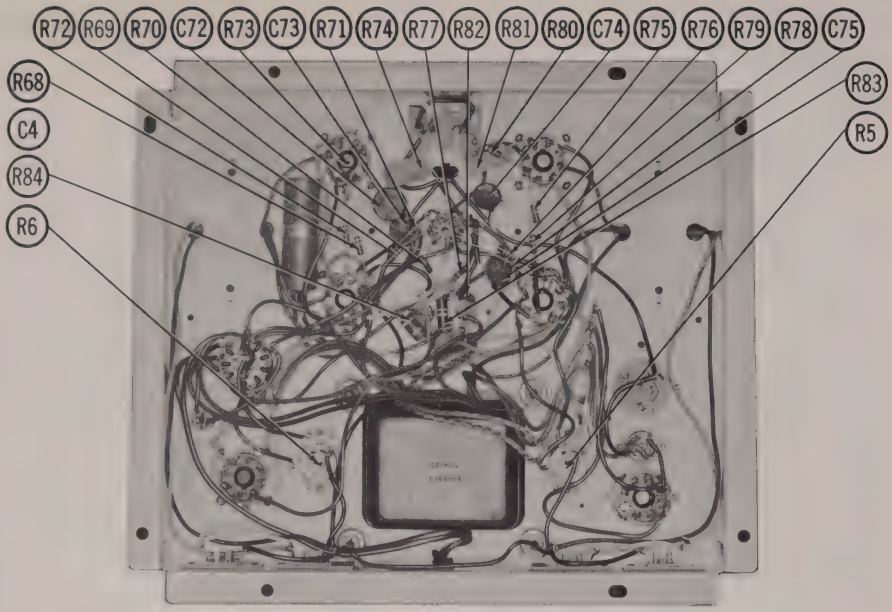


SET 499 FOLDER 17

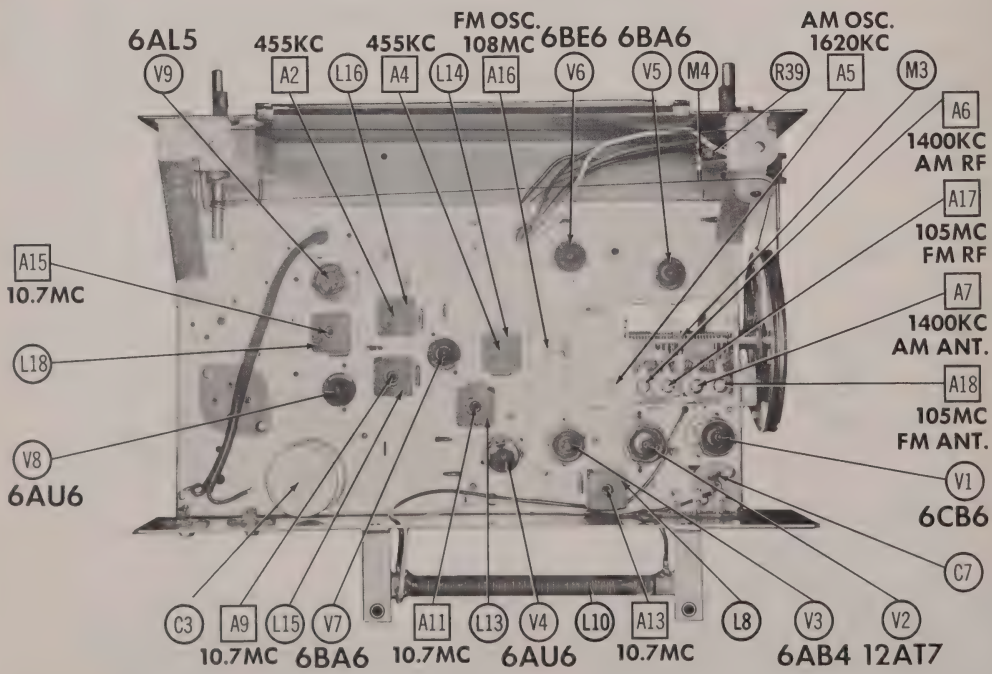
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JN993

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



AMP CHASSIS - BOTTOM VIEW



TUNER CHASSIS - TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

AM ALIGNMENT—SELECTOR SWITCH IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across output jack thru AC probe	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	1620KC	"	"	A5	"
3.	High side thru .1mfd to pin 1 (grid) of AM RF Amp. Low side to chassis.	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum deflection while rocking tuning gang.
4.	Across AM antenna terminals with 100mmf in high side.	1400KC	"	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR SWITCH IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .005mfd pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A14	"
7.	"	"	"	DC probe thru 1meg to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR SWITCH IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .005mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Tuning gang fully open.	Vert. Amp. to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A14	"
7.	"	"	"	Vert. Amp. thru 27K to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR SWITCH IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 300Ω in high side.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A16	Adjust for maximum deflection.
9.	"	105MC	105MC	"	A17, A18	"

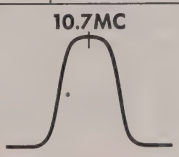


FIG. 1

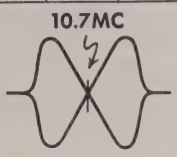
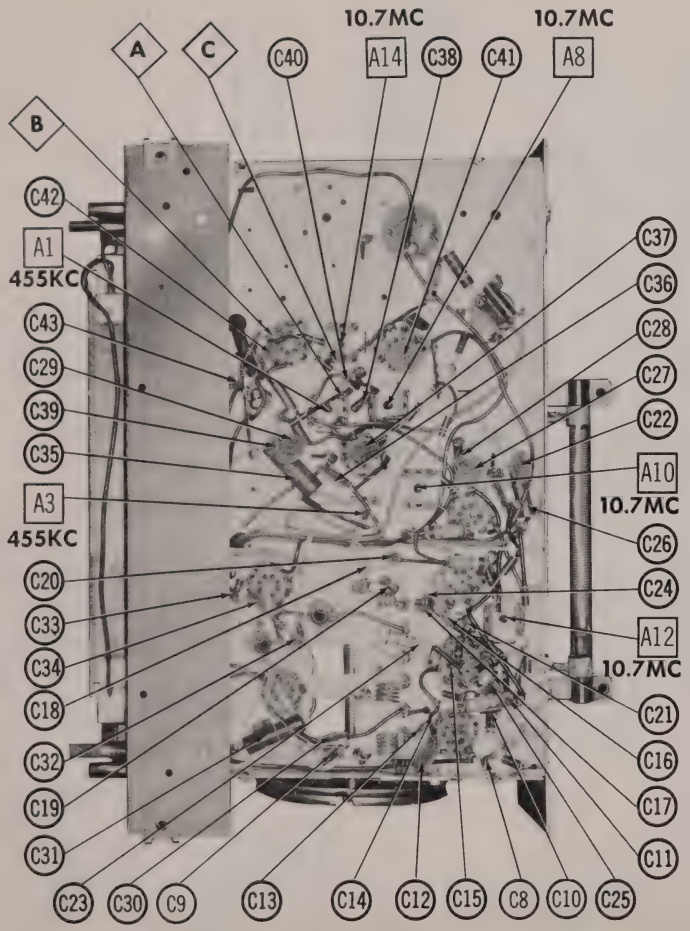
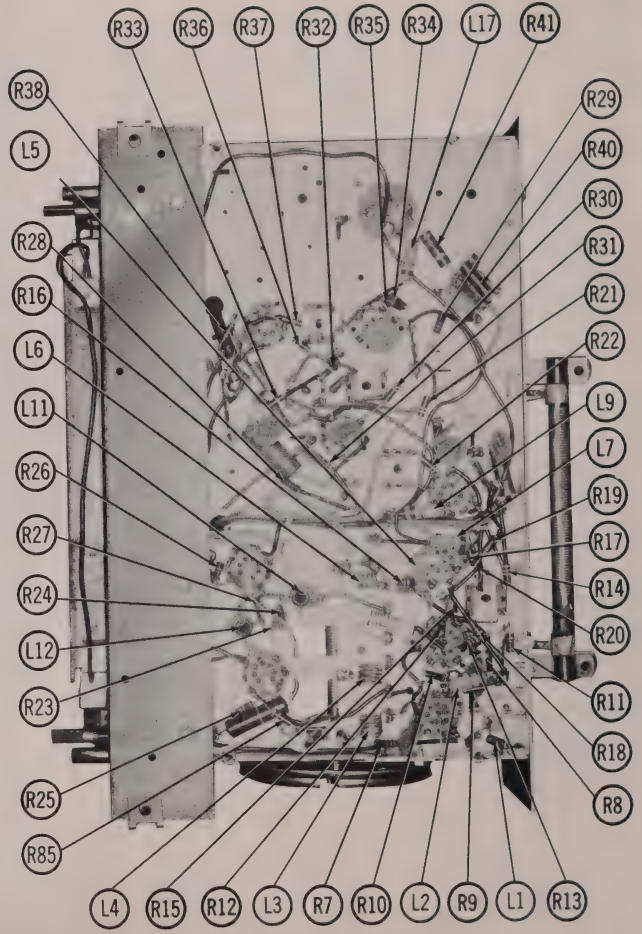


FIG. 2



TUNER CHASSIS BOTTOM VIEW
- ALIGNMENT & CAPACITOR IDENT.



TUNER CHASSIS BOTTOM VIEW
- RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6CB6	V10	Channel A Preamplifier	12AX7
V2	FM Mixer-FM AFC	12AT7	V11	Channel B Preamplifier	12AX7
V3	FM Oscillator	6AB4	V12	Channel A Phase Inv. -	
V4	1st FM IF Amplifier	6AU6		Channel B Phase Inv. -	12AX7
V5	AM RF Amplifier	6BA6	V13	Channel A Output	6V6GT
V6	AM Converter	6BE6	V14	Channel A Output	6V6GT
V7	2nd FM-1st AM IF Amplifier	6BA6	V15	Channel B Output	6V6GT
V8	FM Limiter-AM Det. -AVC	6AU6	V16	Channel B Output	6V6GT
V9	Discriminator	6AL5	V17	Rectifier	5U4GB
			V18	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	450	12125	AFH4-18-50	C0365	FP396.1	TMT-41	TVL-3791	
B	■40	450			BR2045	TC795	TD-40-450	TVA-1709	
C	▲20	450							
D	20	450							
C2	40	200	12127	AFH1-25	A0290	FP146	TMS-31	TVL-1460	
C3A	▲40	200	12150	AFH2-57	B0450	FP217.87	TMD-38	TVL-2575	
B	▲40	200							
C4A	40	25	12126	PRS2195	BBRD4415	TCD48	TDLD-7	TVA-2445	
B	40	25							
C5	8	25NP	12090	PRS7315	BBR8-150	TCN5010		TVANS-1203.8*	
C6	8	25NP	12090	PRS7315	BBR8-150	TCN5010		TVANS-1203.8*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C8	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C9	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	220		DI-220	DD-221	L10T22	CCD-221	B-210	10TS-T22
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CNO-447	10TCU-Q47
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	1		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C16	47 N750 10%		N750-DI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C17	47 N750 10%		N750-DI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	1-5	#12151		829-6				
C19	2.5 N2200	#12156				*		
C20	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C21	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C24	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	.0022 200V		P288N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.022 200V		P288N-022	DD-203	CUB4S22	4DP-4-223	GEM-4122	2TM-S22
C32	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C33	9 N4700 10%	#12155				*		
C34	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C35	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C36	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	2 N750	#12099					CN7-522	10TCU-V22
C39	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C40	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	100 N150	#12048				*	10TCP-T10	
C43	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C44	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C45	3500		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C46	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C47	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C48	75		DI-82	DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C49	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C51	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C52	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C53	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C54	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C55	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C56	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C58	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C59	3500		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C60	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C61	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C62	75		DI-82	DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C63	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C64	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C65	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C66	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C67	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C68	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C69	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C70	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C71	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C72	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C73	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C74	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C75	22000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

V-M Part Number.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg*	linear taper	12398	BT-175				Loudness, Channel A
B	2meg*			STR-175				Loudness, Channel B
R2A	500K	linear taper	12399	B-59	AD47-500K-S		FA55L	Balance, Channel A
B	500K			SR-59	Not Req.		RU55L	Balance, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg	linear taper	12400	B-70	AD47-1meg-Z		FA16A	Treble, Channel A
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	1meg	linear taper	12401	B-70	AD47-1meg-Z		FA16A	Bass, Channel A
B	1meg			SR-70	Not Req.		RU16A	Bass, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R5A	150Ω	2(WW)	12361	WN-201	A43-150	WPK-200	FL200P	Hum Balance, Channel A
B	Shaft			AK-30	FKS-1/4	Not Req.	Not Req.	
R6A	150Ω	2(WW)	12361	WN-201	A43-150	WPK-200	FL200P	Hum Balance, Channel B
B	Shaft			AK-30	FKS-1/4	Not Req.	Not Req.	

* Taps @ 600K & 1.2meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	33K	
R8	15K 1W	
R9	10K	
R10	1meg	
R11	47K	
R12	33Ω	
R13	470K	
R14	470K	
R15	220Ω	
R16	22K	
R17	220Ω	
R18	680Ω	
R19	1000Ω	
R20	1meg	
R21	6800Ω	
R22	4700Ω	
R23	12K	
R24	68K	
R25	100Ω	
R26	39K	
R27	33Ω	
R28	2.2meg	
R29	330Ω	
R30	4700Ω	
R31	68Ω	
R32	100K	
R33	100K	
R34	15K	
R35	15K	
R36	100K	
R37	100K	
R38	100K	
R39	470K	
R40	1000Ω 1W	
R41	330Ω 1W	
R42	680K	
R43	100K	
R44	68K	
R45	2.2meg	
R46	220K	
R47	1000Ω	
R48	27K	
R49	27K	
R50	150K	
R51	10K	
R52	220K	
R53	47K	
R54	1500Ω	
R55	22K	
R56	680K	
R57	100K	
R58	68K	
R59	2.2meg	
R60	220K	
R61	1000Ω	
R62	150K	
R63	10K	
R64	220K	
R65	47K	
R66	1500Ω	
R67	22K	
R68	220K	
R69	470K	
R70	47K	
R71	470Ω	
R72	220K	
R73	220K	
R74	200Ω 5W	
R75	220K	
R76	470K	
R77	47K	
R78	470Ω	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REMARKS
R79	220K	
R80	220K	
R81	200Ω 5W	

ITEM No.	RATING	REMARKS
R82	3300Ω	
R83	22K 1W	
R84	4700Ω 2W	

ITEM No.	RATING	REMARKS
R85	3.3meg	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA V-M PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	12648						
L2	RF Choke	12641	19-1003	19-1003	BC-564	4608		3.3uh ①
L3	FM RF Coil	12643						
L4	FM Mixer Coil	12644						
L5	RF Choke	12641	19-1003	19-1003	BC-564	4603		3.3uh ①
L6	FM Osc. Coil	12645						
L7	Fil. Choke	12642	19-1001	19-1001	BC-562	4604		1.5uh ①
L8	1st FM IF Trans.	12649	16-3487	16-3487	FM-254	1463		
L9	Fil. Choke	12642	19-1001	19-1001	BC-562	4604		1.5uh ①
L10	Loopstick	1189	14-7002	14-7002	BC-419	705-A		
L11	AM RF Coil	12646						
L12	AM Osc. Coil	12647	14-1055	14-1055	BC-394	70-OSC		
L13	2nd FM IF Trans.	12649	16-3487	16-3487	FM-254	1463		
L14	1st AM IF Trans.	12650	16-6758	16-6758	BC-352	12-C1	RF-1	
L15	3rd FM IF Trans.	12649	16-3487	16-3487	FM-254	1463		
L16	2nd AM IF Trans.	12650	16-6758	16-6758	BC-353	12-C2	RF-2	
L17	Fil. Choke	12642	19-1001	19-1001	BC-562	4604		1.5uh ①
L18	Discriminator	12651	17-3494	17-3494	FM-253	1464		

① IRC Part #CLA

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1.3A	640 VCT @ .170A Tap @ 270 VCT @ .030A	5V@ 2A	12613-4 ①						
	SEC. 3	SEC. 4	SEC. 5							
	5V@ 3A	6.3 V@ 3A	6.3V@ 1.6A							
	SEC. 6									
	6.3V@ 1.2A									

① Alternate Part #12613.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8000Ω CT	3-4Ω	12612-3①	24S06	A-2901	AU-600	A-3852②	24S06	S-55Z	
T3	8000Ω CT	3-4Ω	12612-3 ①	24S06	A-2901	AU-600	A-3852②	24S06	S-55Z	

① Alternate Part #12612.
② Use original side shields if necessary.

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA V-M PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	19811-1	12A6A	
SP2	3½"	PM	3-4Ω	20979-1	3A15T	
SP3	12"	PM	3-4Ω	19811-1	12A6A	
SP4	3½"	PM	3-4Ω	20979-1	3A15T	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA V-M PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1	16708-G	13TB		26S	S1-1 S3-3	#53	J-43 & J-47X	8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA V-M PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M2	18626-D †	W-103STSS † or W-103STDS †♦	S-69 † or S-69XSD †♦ or S-69XDD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	V-M PART No.	NOTES
M3	Tuning Cap.	12144	3 Gang (Ant. 13-332mmf, RF 12-217mmf, Osc. 10-143mmf)
M4	Switch	12420	Function (Rotary Wafer Type)
M5	Switch	12396	Function (Rotary Wafer Type) Model 812 Preamp.
	Switch	12397	Function (Rotary Wafer Type) Model 912 Preamp.
M6	Antenna	1196	FM
M7	Switch	21338	Off-On (Part of Changer)
M8	Motor Assembly	18361	Alliance, Complete (Includes Motor Part #9134)
	Motor Assembly	18781	GI, Complete (Includes Motor Part #9134)

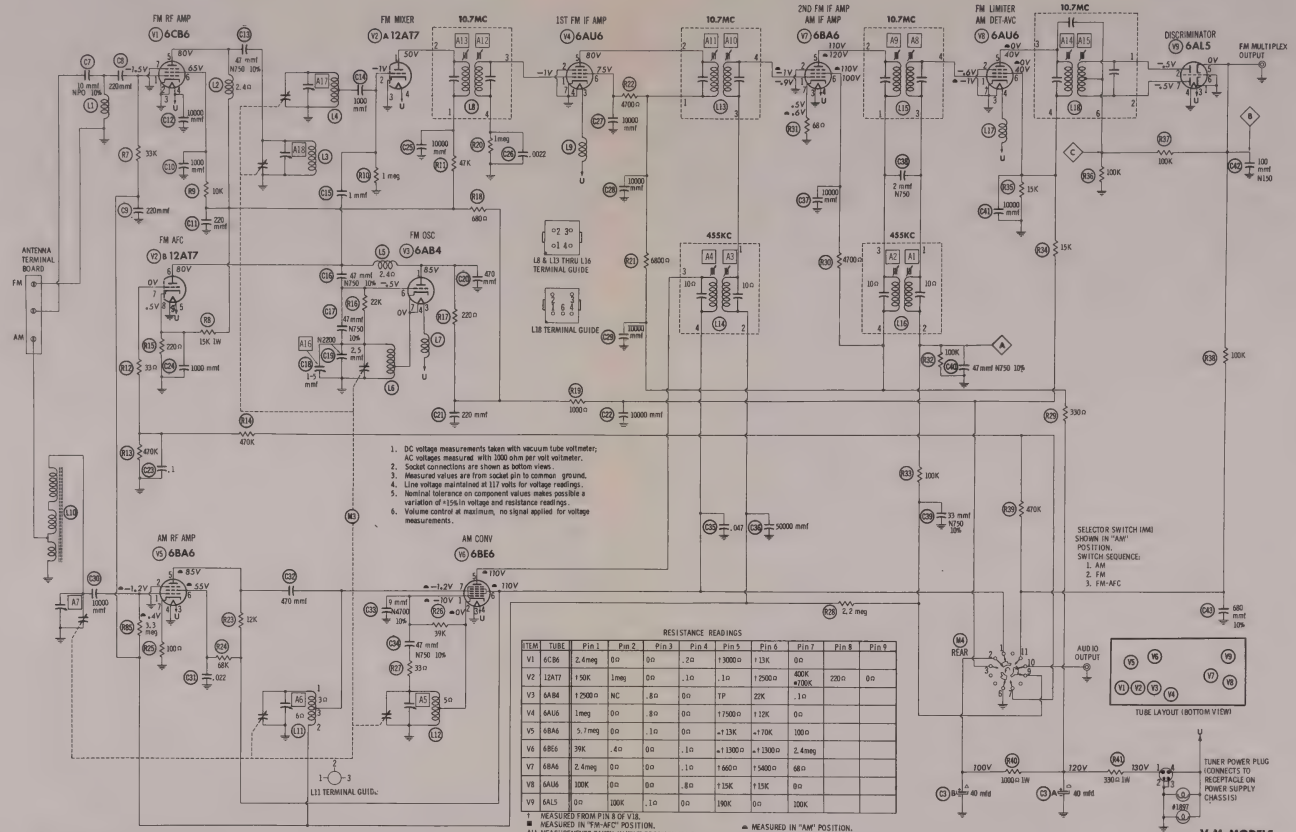
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	20945-B	Loudness, Bass, Treble, Balance
Knob	20944-B	Function (Preamplifier)
Cabinet	19876-B	Blond (Complete)
Cabinet	19876-W	Walnut (Complete)
Cabinet Lid	1187-B	Blond
Cabinet Lid	1187-W	Walnut
Legs	19976-B	Blond
Legs	19976-W	Walnut

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	2.4meg	0Ω	0Ω	.2Ω	†3000Ω	†13K	0Ω		
V2	12AT7	†50K	1meg	0Ω	.1Ω	.1Ω	†2500Ω	400K ▪700K	220Ω	0Ω
V3	6AB4	†2500Ω	NC	.8Ω	0Ω	TP	22K	.1Ω		
V4	6AU6	1meg	0Ω	.8Ω	0Ω	†7500Ω	†12K	0Ω		
V5	6BA6	5.7meg	0Ω	.1Ω	0Ω	▪†13K	▪†70K	100Ω		
V6	6BE6	39K	.4Ω	0Ω	.1Ω	▪†1300Ω	▪†1300Ω	2.4meg		
V7	6BA6	2.4meg	0Ω	0Ω	.1Ω	†660Ω	†5400Ω	68Ω		
V8	6AU6	100K	0Ω	0Ω	.8Ω	†15K	†15K	0Ω		
V9	6AL5	0Ω	100K	.1Ω	0Ω	190K	0Ω	100K		

† MEASURED FROM PIN 8 OF V1B.
▪ MEASURED IN "FM-AFC" POSITION.
▲ MEASURED IN "AM" POSITION.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.

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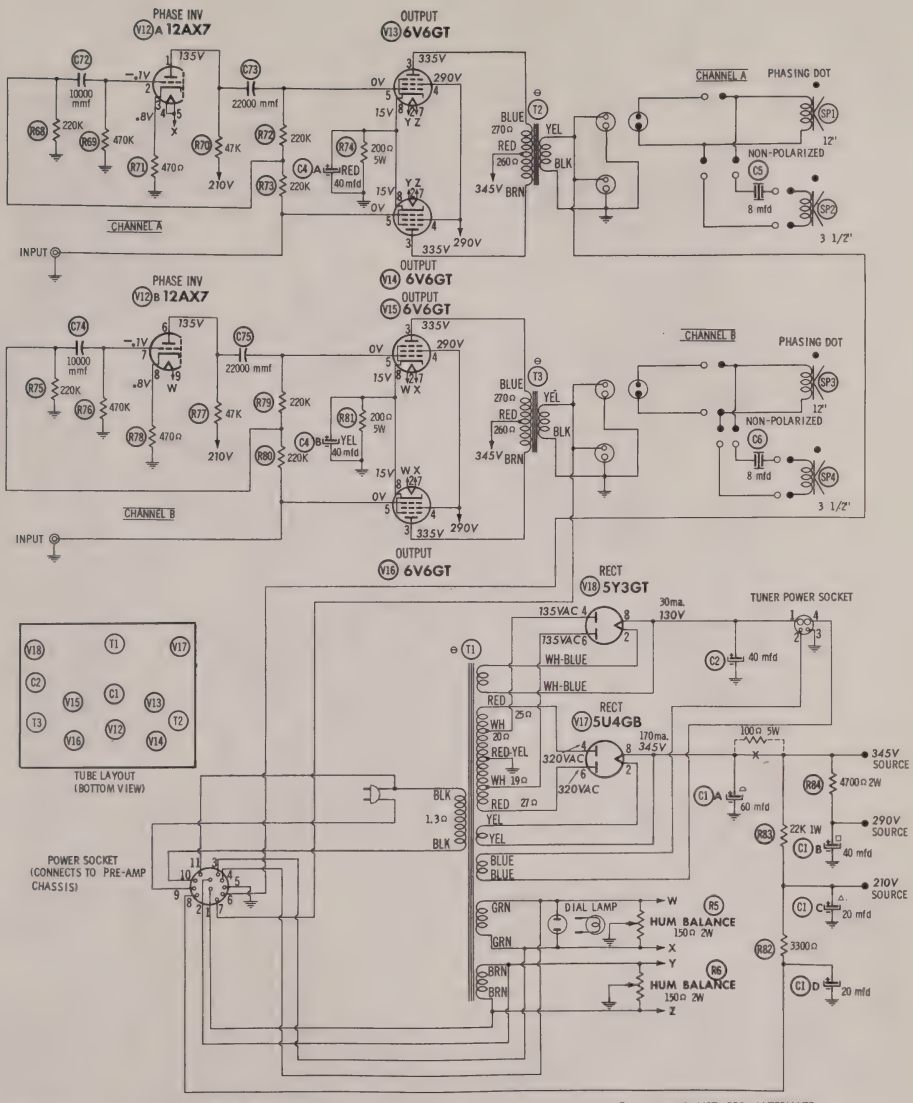
V-M MODELS 812, 912

TUNER SCHEMATIC



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V12	12AX7	††69K	470K	470Ω	40Ω	40Ω	††69K	470K	470Ω	40Ω
V13	6V6GT	NC	40Ω	††270Ω	††4700Ω	440K	TP	40Ω	200Ω	
V14	6V6GT	TP	40Ω	††260Ω	††4700Ω	440K	NC	40Ω	200Ω	
V15	6V6GT	TP	40Ω	††270Ω	††4700Ω	440K	NC	40Ω	200Ω	
V16	6V6GT	NC	40Ω	††260Ω	††4700Ω	440K	TP	40Ω	200Ω	
V17	5U4GB	NC	¶	NC	45Ω	NC	46Ω	NC	¶	
V18	5Y3GT	NC	¶	NC	20Ω	NC	19Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V17.
NC NO CONNECTION
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.

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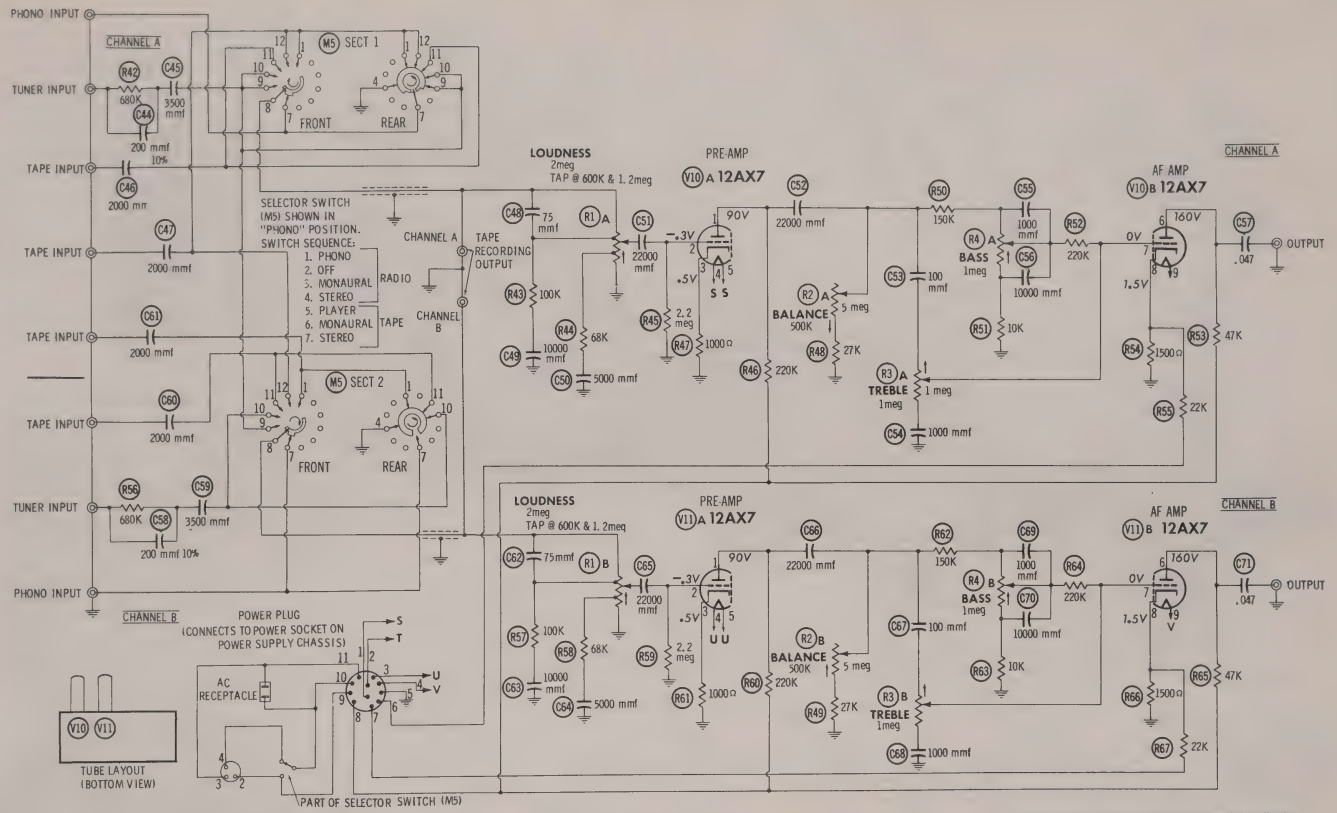
V-M MODELS
812, 912

AMP SCHEMATIC



RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	12AX7	††245K	2.2meg	1000Ω	40Ω	40Ω	††72K	230K	1500Ω	40Ω
V11	12AX7	††245K	2.2meg	1000Ω	40Ω	40Ω	††72K	230K	1500Ω	40Ω

†† MEASURED FROM PIN 8 OF V17.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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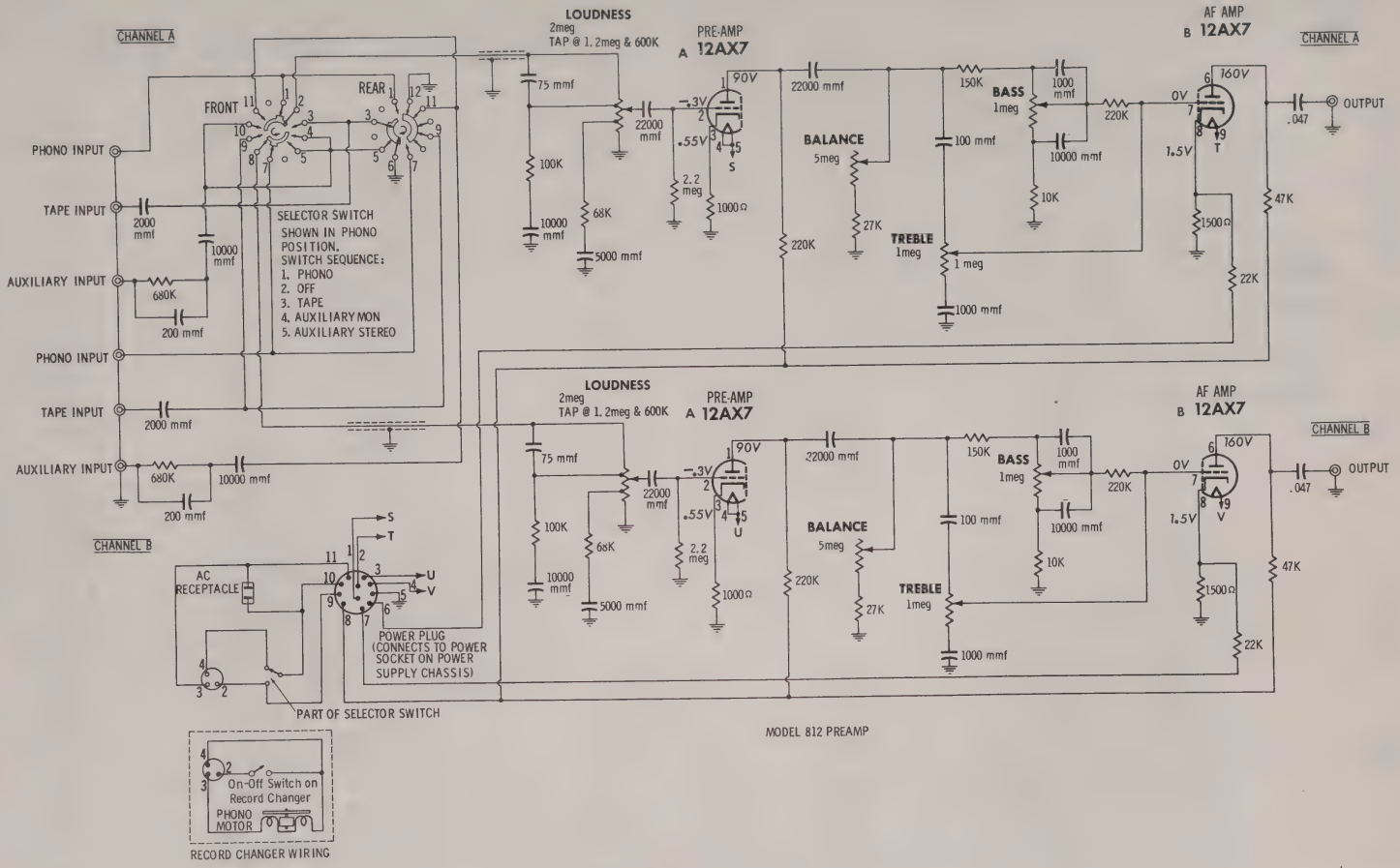
V-M MODELS 812, 912

PREAMP SCHEMATIC FOR MODEL 912



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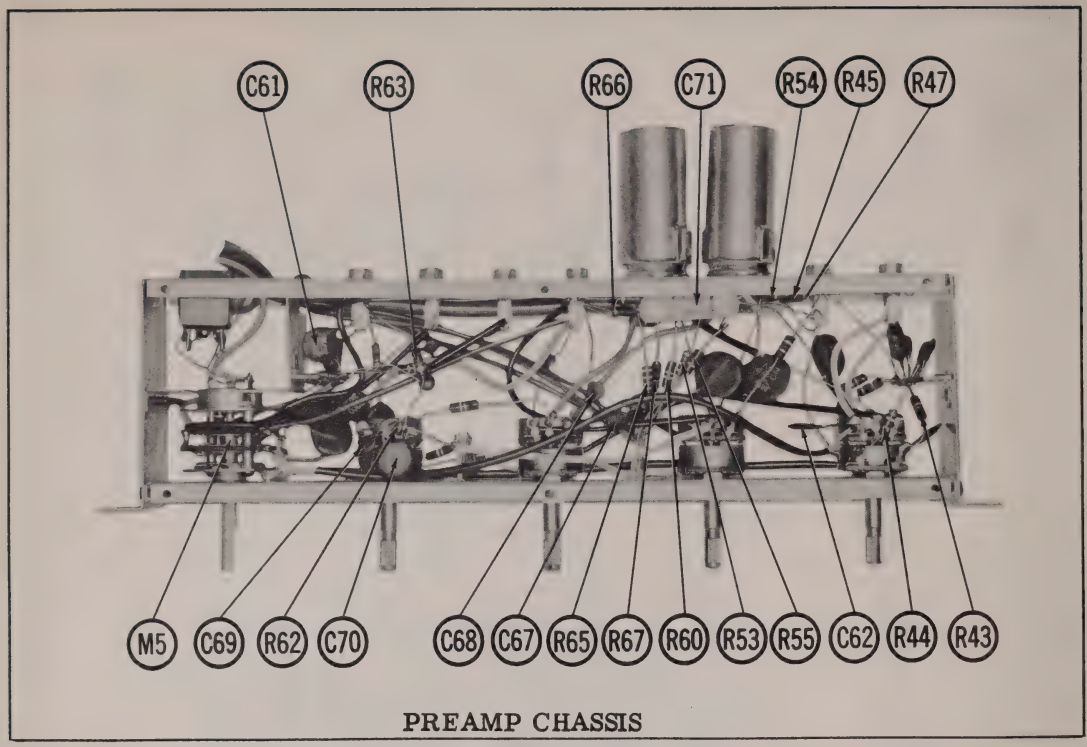
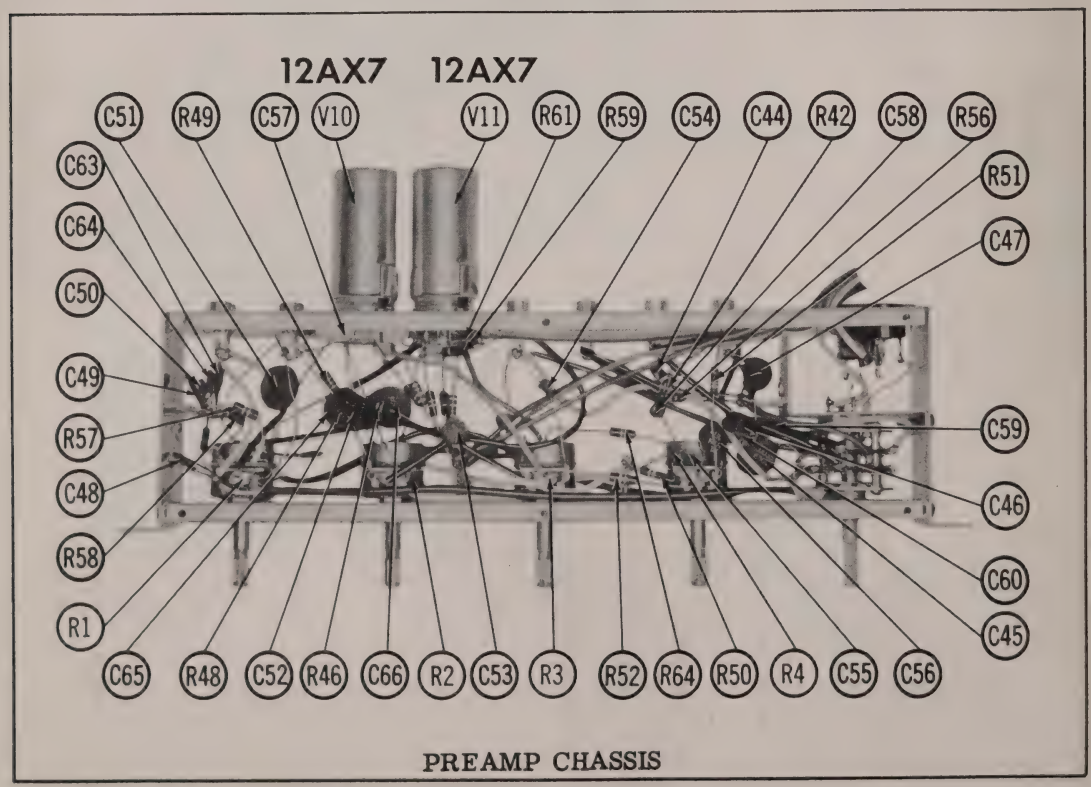
V-M MODELS
812, 912

PREAMP SCHEMATIC FOR MODEL 812

MODEL 812
V-M



PREAMP CHASSIS



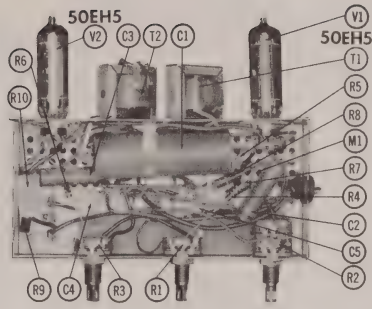
PREAMP CHASSIS

PHOTOFACT® Folder

WEBCOR MODELS 1012-1, 1013-1, 1014-1, 1053-1, 1053-1A (Ch. 14X315, -3, -4)

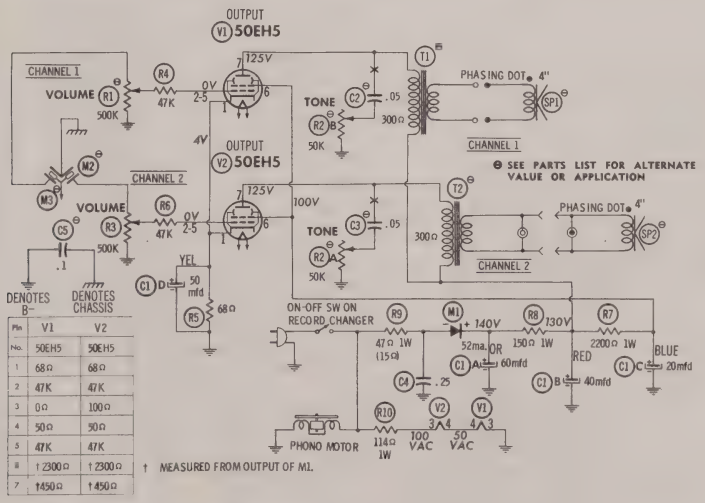
WEBCOR MODELS 1012-1, 1013-1, 1014-1, 1053-1, 1053-1A (Ch. 14X315, -3, -4)

MODEL 1053-1



TRADE NAME	Webcor Models BP-1012-1, EP-1012-1, GP-1013-1, RP-1013-1, RP-1014-1, TP-1014-1, BP-1053-1, GP-1053-1, BP-1053-1A, GP-1053-1A (Ch. 14X315, -3, -4)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 2 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 27 Watts, .26 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE WEBCOR 184 — PHOTOFACT SET 447 FOLDER 13



Pin	V1	V2
No.	50EH5	50EH5
1	68Ω	68Ω
2	47K	47K
3	0Ω	100Ω
4	50Ω	50Ω
5	47K	47K
6	†2300Ω	†2300Ω
7	†450Ω	†450Ω

† MEASURED FROM OUTPUT OF M1.

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT879

SET499 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 Output	50EH5	V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	30P369		BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150			BBR-50-25	TC48	TD-50-25	TVA-1206	
C	20	150							
D	50	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V	Note 1	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C3	.05 400V	Note 1	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C4	.25 400V		P488N-25		CUB4P25	4DP-5-254	GEM-4025	4TM-P25
C5	.1 400V	Note 2	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

Note 1. Not used in Models 1012, 1013, 1053-1.
Note 2. Chassis 14X315 and 14X315-3 use .04mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500K	½	31P163 ①					Volume, Channel 1
R2A	50K	½	31P164 ②					Tone, Channel 2
B	50K	½	②					Tone, Channel 1
R3	500K	½	31P163					Volume, Channel 2

① Models 1012-1, 1013-1, 1014-1 use 500K Vol. W/ switch (Part #31P162).
② Not used in Models 1012-1, 1013-1, 1053-1.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	47K	
R5	68Ω	
R6	47K	

ITEM No.	RATING	REMARKS
R7	2200Ω 1W	
R8	150Ω 1W	
R9	47Ω 1W	(15Ω) *

ITEM No.	RATING	REMARKS
R10	114Ω 1W	#29P087

* Used in Models 1012-1, 1013-1.
\# Webcor Part Number.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4500Ω	3-4Ω	67P079-B ①	24S48	A-3026	AU-601 ②	A-3877 ②	24S48	S-6X	
T2	4500Ω	3-4Ω	67P079-B ①	24S48	A-3026	AU-601 ②	A-3877 ②	24S48	S-6X	

① Alternate Part #67P079.
② Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA WEBCOR PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	76P092 *	4A07	* Used in Models 1053-1, 1053-1A
SP2	4"	PM	3-4Ω	76P092 *	4A07	◆ Used in Model 1014-1
	3"x 5"	PM	3-4Ω	76P094 ◆		‡ Used in Model 1012-1
	3½"	PM	3-4Ω	76P076 ‡		† Used in Model 1013-1
	3½"	PM	3-4Ω	76P093 †		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA WEBCOR PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.052A	65P155 *	2ER *	RE504 *	K200 *	SR200 *	* Silicon

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA WEBCOR PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	21P596 ① 21P598 ②	76TS-TB		96				12TH5	

① Includes needle, Models 1053-1, 1053-1A
② Includes needle, Models 1012-1, 1013-1, 1014-1

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA WEBCOR PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	21S620-SS (78 RPM)		CRA-57 † or CRA-57D ◆	† Jewel ◆ Diamond
	21S620-LS (LP)		CRA-57X † or CRA-57XD ◆	

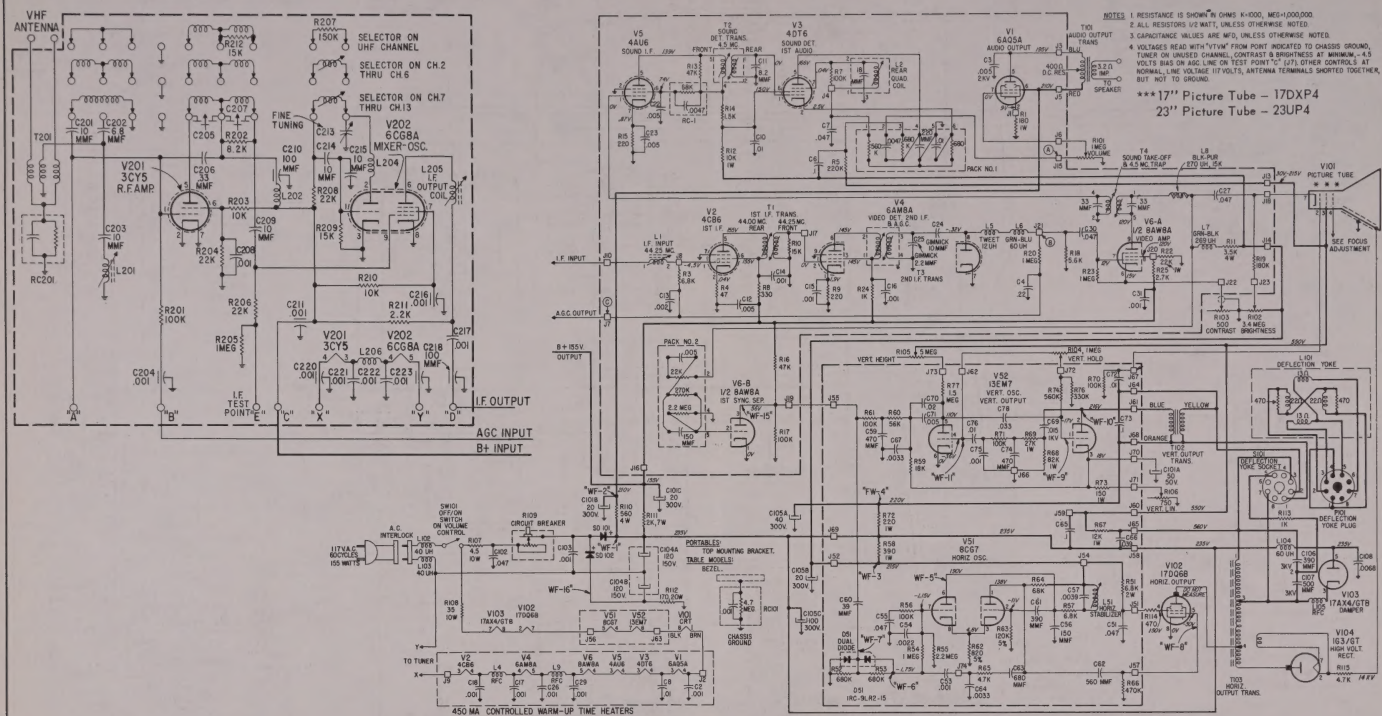
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	39P213-5	Volume, Models 1053-1, 1053-1A Tone, Model 1053-1A
Knob	39P213-3	Volume, Models 1012-1, 1013-1
Knob	39P213-4	Volume, Tone; Model 1014-1
Cabinet	92X108-5	Blue, Model BP-1053-1A
Cabinet	92X108-6	Grey, Model BP-1053-1A
Cabinet	92X108-1	Blue, Model GP-1053-1
Cabinet	92X108-2	Grey, Model GP-1053-1
Cabinet Ass'y.	80X234-1	Ebony, Model EP-1012-1
Cabinet Ass'y.	80X234-2	Blue, Model BP-1012-1
Cabinet Ass'y.	80X242-1	Green, Model GP-1013-1
Cabinet Ass'y.	80X242-2	Gold, Model RP-1013-1
Cabinet Ass'y.	80X244-1	Model TP-1014-1
Cabinet Ass'y.	80X244-2	Model RP-1014-1
Handle	39P235-1	Cabinet, Models 1012-1, 1013-1

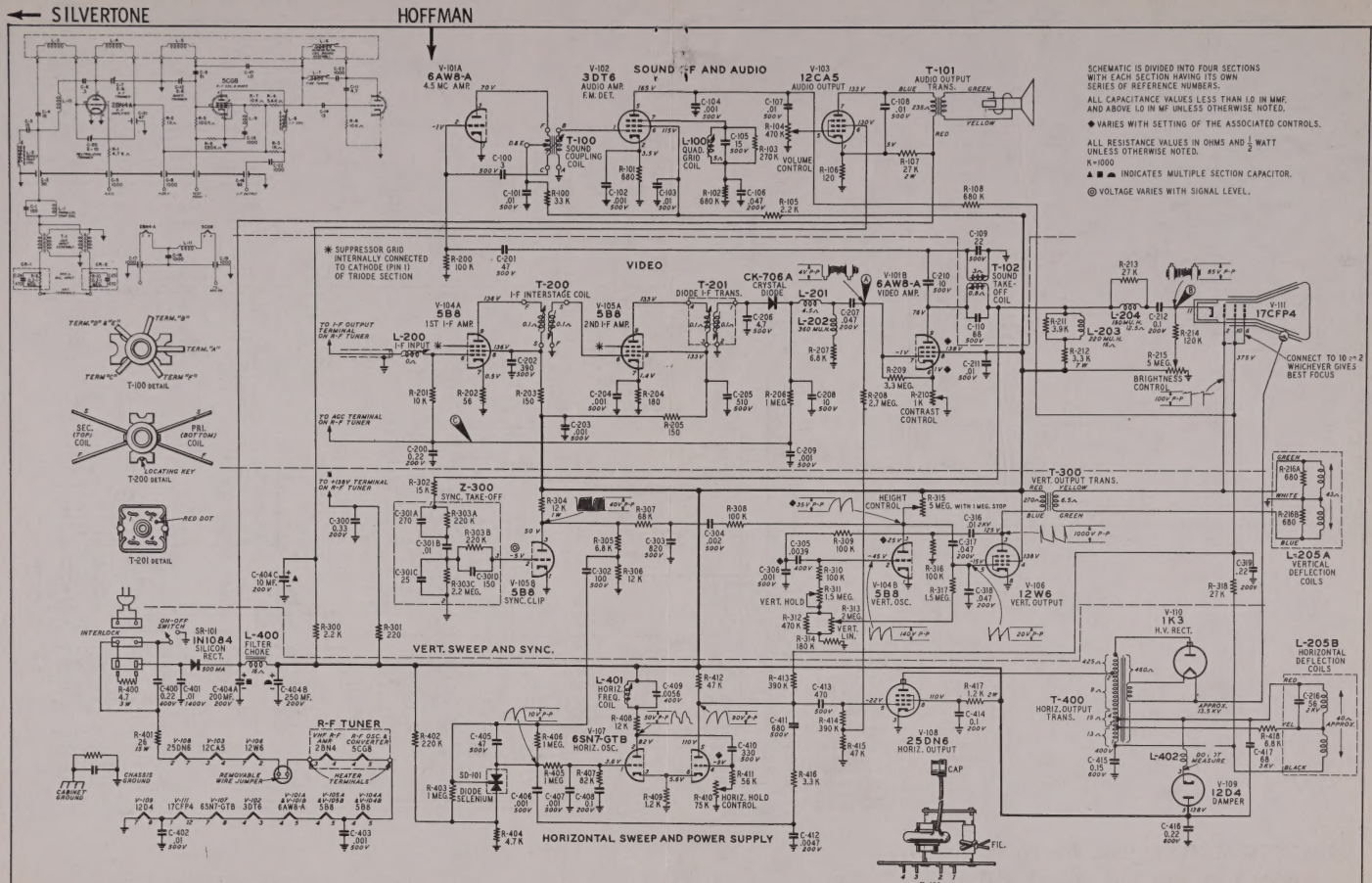
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)


VHF ANTENNA
SELECTOR ON UHF CHANNEL
SELECTOR ON CH.2 THRU CH.6
SELECTOR ON CH.7 THRU CH.13
FINE TUNING
V201 3CY5 R.F.AMP.
V202 6CG8A MIXER-OSC.
L204
L205 I.F. OUTPUT COIL
I.F. TEST POINTS
I.F. OUTPUT
AGC INPUT
B+ INPUT
V5 4AU6 SOUND I.F.
T2 SOUND DET. TRANS. 4.5 MC
V3 4DT6 SOUND DET. 1ST AUDIO
V1 6AQ5A AUDIO OUTPUT
T101 AUDIO OUTPUT TRANS.
SPEAKER
PACK NO.1
V4 6AM8A VIDEO DET. 2ND I.F. R.A.G.C.
V2 4CB6 1ST I.F.
T1 1ST I.F. TRANS. 44.25 MC 45.75 MC
V6-A 1/2 6AW8A VIDEO AMP.
V6-B 1/2 6AW8A 1ST SYNC. SEP.
PACK NO.2
V101 PICTURE TUBE
SEE FOCUS ADJUSTMENT
R103 500 CONTRAST
R102 3.4 MEG BRIGHTNESS
L101 DEFLECTION YOKE
DEFLECTION YOKE SOCKET
DEFLECTION YOKE PLUG
VERT. HEIGHT
VERT. HOLD
V52 13EM7 VERT. OSC. VERT. OUTPUT
T102 VERT. OUTPUT TRANS.
V51 BC57 HORIZ. OSC.
V102 17DQ6B HORIZ. OUTPUT
V103 17AX4/GTB DAMPER
V104 1G3/GT HIGH VOLT. RECT.
T103 HORIZ. OUTPUT TRANS.
SW101 OFF/ON SWITCH ON VOLUME CONTROL
A.C. INTERLOCK
117 VAC 60 CYCLES 155 WATTS
CIRCUIT BREAKER
PORTABLES: TOP MOUNTING BRACKET.
TABLE MODELS: BEZEL.
CHASSIS GROUND
TO TUNER
450 MA CONTROLLED WARM-UP TIME HEATERS
NOTES
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND. TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM, - 4.5 VOLTS BIAS ON AGC LINE ON TEST POINT "C" (27). OTHER CONTROLS AT NORMAL. LINE VOLTAGE 117 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND.
*** 17" Picture Tube – 17DXP4
23" Picture Tube – 23UP4

SILVERTONE MODELS PC-1104, PC-1105, PC-1112, -7,
PC-1113, -7, 1104, 1105, 1112, -7, 1113, -7
(CH. 456.50370, 50371, 528.50370, 50371)

Schematic Diagram Courtesy of Sears, Roebuck & Company



HOFFMAN MODEL 1777 SERIES (CH. 360)

Schematic Diagram Courtesy of Hoffman Electronics Corporation

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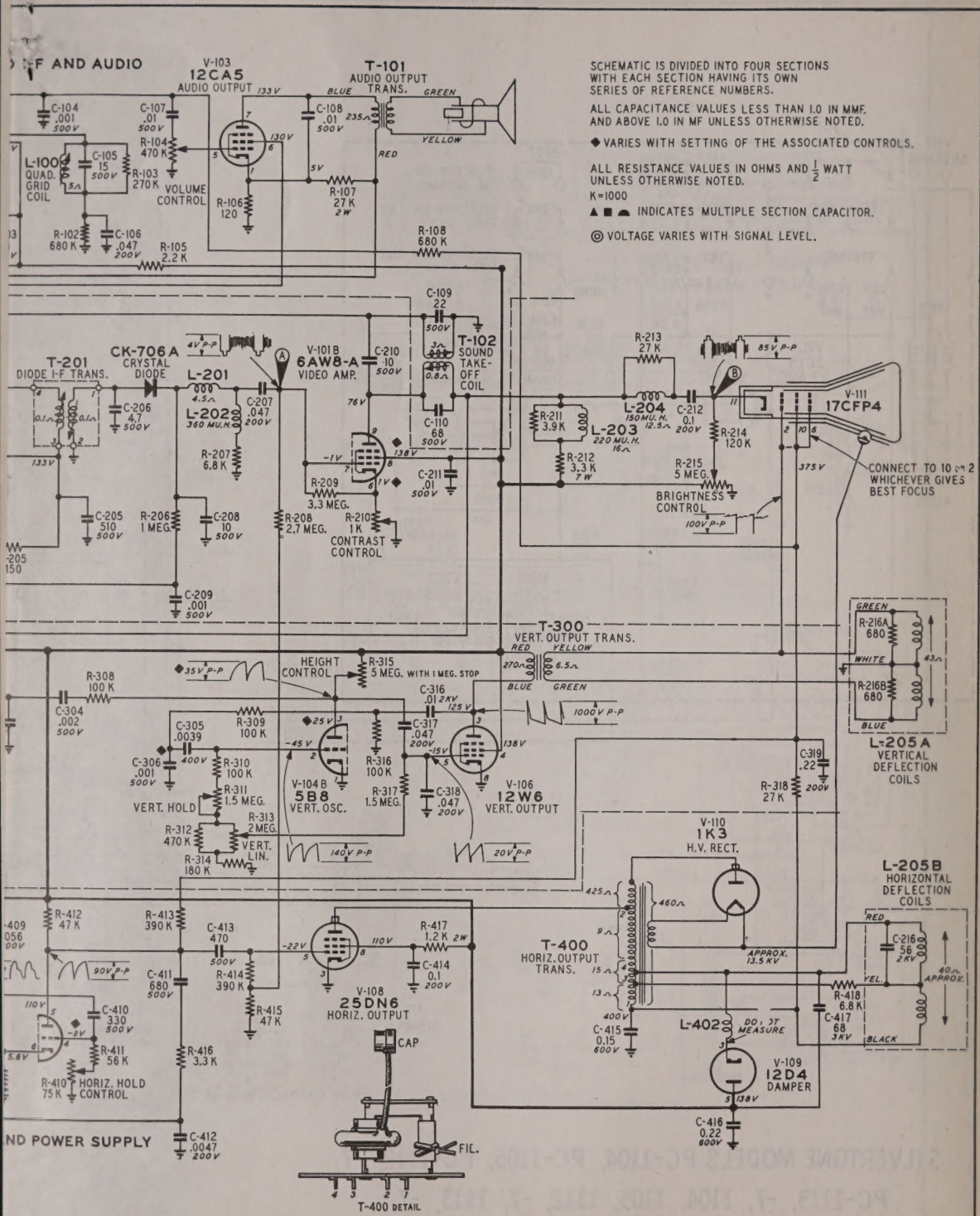
SCHEMATIC IS DIVIDED INTO FOUR SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS.
ALL CAPACITANCE VALUES LESS THAN 1.0 IN MMF. AND ABOVE 1.0 IN MF UNLESS OTHERWISE NOTED.
◆ VARIES WITH SETTING OF THE ASSOCIATED CONTROLS.
ALL RESISTANCE VALUES IN OHMS AND 1/2 WATT UNLESS OTHERWISE NOTED.
K=1000
▲ ■ ▰ INDICATES MULTIPLE SECTION CAPACITOR.
◎ VOLTAGE VARIES WITH SIGNAL LEVEL.
V-103 12CA5 AUDIO OUTPUT
T-101 AUDIO OUTPUT TRANS.
L-1006 QUAD. GRID COIL
VOLUME CONTROL
T-201 DIODE I-F TRANS.
CK-706A CRYSTAL DIODE
L-201
L-202
V-101B 6AW8-A VIDEO AMP.
T-102 SOUND TAKE-OFF COIL
L-204
L-203
V-111 17CFP4
CONNECT TO 10 OR 2 WHICHEVER GIVES BEST FOCUS
BRIGHTNESS CONTROL
CONTRAST CONTROL
T-300 VERT. OUTPUT TRANS.
HEIGHT CONTROL
V-104B 588 VERT. OSC.
V-106 12W6 VERT. OUTPUT
VERT. HOLD
VERT. LIN.
L-205A VERTICAL DEFLECTION COILS
V-110 1K3 H.V. RECT.
L-205B HORIZONTAL DEFLECTION COILS
T-400 HORIZ. OUTPUT TRANS.
V-108 25DN6 HORIZ. OUTPUT
HORIZ. HOLD CONTROL
L-402
V-109 12D4 DAMPER
CAP
FIL.
T-400 DETAIL
ND POWER SUPPLY

Schematic Diagram Courtesy of Hoffman Electronics Corporation